

# Phospho-Vimentin (Ser56) Antibody



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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 Mk	Endogenous	57	Rabbit	#P08670	7431

## Product Usage Information

### Application

Western Blotting  
Immunofluorescence (Immunocytochemistry)

### Dilution

1:1000  
1:200

## 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

Phospho-Vimentin (Ser56) Antibody detects endogenous levels of vimentin only when phosphorylated at Ser56.

## Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser56 of human vimentin. Antibodies are purified by peptide affinity chromatography.

## 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 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).

During mitosis, CDK1 phosphorylates vimentin at Ser56. This phosphorylation provides a PLK binding site for vimentin-PLK interaction. PLK further phosphorylates vimentin at Ser82, which might serve as memory phosphorylation site and play a regulatory role in vimentin filament disassembly (8,9).

## Background References

- Eng, L.F. et al. (2000) *Neurochem Res* 25, 1439-51.
- Goebel, H.H. et al. (1987) *Acta Histochem Suppl* 34, 81-93.
- Leader, M. et al. (1987) *Histopathology* 11, 63-72.
- Helfand, B.T. et al. (2004) *J Cell Sci* 117, 133-41.
- Tang, D.D. et al. (2005) *Biochem J* 388, 773-83.
- Fomina, I.G. et al. (1990) *Klin Med (Mosk)* 68, 125-7.
- Nieminen, M. et al. (2006) *Nat Cell Biol* 8, 156-62.
- Yamaguchi, T. et al. (2005) *J Cell Biol* 171, 431-6.
- Oguri, T. et al. (2006) *Genes Cells* 11, 531-40.
- Zhu, Q.S. et al. (2011) *Oncogene* 30, 457-70.
- Xue, G. and Hemmings, B.A. (2013) *J Natl Cancer Inst* 105, 393-404.
- Yamaguchi, T. et al. (2005) *J. Cell Biol.* 171, 431-436.
- Oguri, T. et al. (2006) *Genes Cells* 11, 531-540.

<b>Species Reactivity</b>	Species reactivity is determined by testing in at least one approved application (e.g., western blot).
<b>Western Blot Buffer</b>	<b>IMPORTANT:</b> For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.
<b>Applications Key</b>	<b>W:</b> Western Blotting <b>IF-IC:</b> Immunofluorescence (Immunocytochemistry)
<b>Cross-Reactivity Key</b>	<b>H:</b> Human <b>M:</b> Mouse <b>Mk:</b> Monkey
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