

REAGENTS PROVIDED

Northern Lights™ (NL) 637-conjugated goat polyclonal anti-human Vimentin: Supplied as a 10X solution of antibody in 0.5 mL PBS containing 0.09% sodium azide.

Isotype: polyclonal goat IgG

STORAGE

Reagents are stable for **twelve months** from date of receipt when stored in the dark at 2-8 °C.

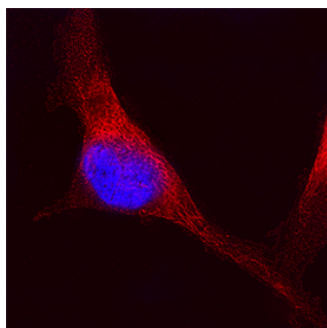
INTENDED USE

Designed to visualize the expression of Vimentin by fluorescence microscopy for staining cells and tissues. Conjugated Vimentin antibodies are ideal for immunocytochemistry colocalization studies in cytoplasmic intermediate filaments.

PRODUCT DESCRIPTION

Produced in goat immunized with *E. coli*-derived recombinant human Vimentin (Ser2-Glu466; Accession # P08670). The antigen affinity-purified antibody was then conjugated to fluorochrome NL637. The spectral characteristics of NL637 are provided, along with those of Cy5™ and APC for comparison.

Fluorochrome	Absorption Maximum (nm)	Emission Maximum (nm)
NL637	637	658
APC	645	660
Cy5	650	670



Goat anti-human Vimentin

Immunofluorescent detection of Vimentin (red color) in fixed HeLa cells. Labeling is confined to cytoplasmic intermediate filaments. Nuclei were labeled with DAPI (blue color).

FLUORESCENT STAINING VALIDATION

This antibody has been tested for immunofluorescent detection of Vimentin in HeLa and HEK293 cells fixed in 2% formaldehyde. Cells were incubated with goat anti-human Vimentin antibody conjugated to NL637 at a final concentration of 1X (1:10 dilution) overnight at 4 °C. After washing with PBS, cells were counterstained with DAPI to label cell nuclei. If a staining volume of 250 μ L is used, this vial can be used for 20 tests; 100 tests can be done in a staining volume of 50 μ L.

BACKGROUND INFORMATION

Vimentin is a 57 kDa class III intermediate filament (IF) protein that belongs to the intermediate filament family. It is the predominant IF in cells of mesenchymal origin such as vascular endothelium and blood cells (1-3). The human Vimentin cDNA encodes a 466 amino acid (aa) protein that contains head and tail regions with multiple regulatory Ser/Thr phosphorylation sites, and a central rod domain with three coiled-coil regions separated by linkers (1, 2). Human Vimentin shares 97-98% aa identity with mouse, rat, ovine, bovine and canine Vimentin. Sixteen Vimentin coiled-coil dimers self assemble to form intermediate (10-12 nm wide) filaments (4). These filaments then anneal longitudinally to form non-polarized fibers that support cell structure and withstand stress (4). IF fibers are highly dynamic, and half-life depends on the balance between kinase and phosphatase activity. For example, phosphorylation followed by dephosphorylation drives IF disintegration, followed by reorganization during mitosis (1, 5, 6). Interactions of head and tail domains link IFs with other structures such as actin and microtubule cytoskeletons (7). Vimentin is involved in positioning autophagosomes, lysosomes and the Golgi complex within the cell (8). It facilitates cell migration and motility by recycling internalized trailing edge integrins back to the cell surface at the leading edge (9-11). Vimentin helps maintain the lipid composition of cellular membranes, and caspase cleavage of Vimentin is a key event in apoptosis (8, 12). Phosphorylation promotes secretion of Vimentin by TNF- α stimulated macrophages (13). Extracellular Vimentin has been shown to associate with several microbes, and appears to promote an antimicrobial oxidative burst (13, 14). Cell-associated Vimentin can also interact with NKp46 to recruit NK cells to tuberculosis-infected monocytes (15).

REFERENCES

- Omary, M.B. *et al.* (2006) Trends Biochem. Sci. **31**:383.
- Ivaska, J. *et al.* (2007) Exp. Cell Res. **313**:2050.
- Ferrari, S. *et al.* (1986) Mol. Cell. Biol. **6**:3614.
- Sokolova, A.V. *et al.* (2006) Proc. Natl. Acad. Sci. USA **103**:16206.
- Eriksson, J.E. *et al.* (2004) J. Cell Sci. **117**:919.
- Li, Q.F. *et al.* (2006) J. Biol. Chem. **281**:34716.
- Esue, O. *et al.* (2006) J. Biol. Chem. **281**:30393.
- Styers, M.L. *et al.* (2005) Traffic **6**:359.
- McInroy, L. and A. Maata (2007) Biochem. Biophys. Res. Commun. **360**:109.
- Nieminen, M. *et al.* (2006) Nat. Cell Biol. **8**:156.
- Ivaska, J. *et al.* (2005) EMBO J. **24**:3834.
- Byun, Y. *et al.* (2001) Cell Death Differ. **8**:443.
- MorVaknin, N. *et al.* (2003) Nat. Cell Biol. **5**:59.
- Zou, Y. *et al.* (2006) Biochem. Biophys. Res. Commun. **351**:625.
- Garg, A. *et al.* (2006) J. Immunol. **177**:6192.

Warning: Contains sodium azide as a preservative. sodium azide may react with lead and copper plumbing to form explosive metal azides. Flush with large volumes of water during disposal.

NorthernLights is a trademark of R&D Systems, Inc.

Rhodamine Red is a trademark of Invitrogen, Inc.

Cy is a trademark of GE Healthcare.

Triton is a registered trademark of Union Carbide Corp.