abcam

Product datasheet

Anti-MUC1 antibody [SM3] ab245695

Recombinant

5 Images

Overview

Product name	Anti-MUC1 antibody [SM3]
Description	Rabbit monoclonal [SM3] to MUC1
Host species	Rabbit
Tested applications	**Suitable for:** ICC, WB, Flow Cyt, IHC-P
Species reactivity	**Reacts with:** Human
Immunogen	Full length native protein (purified) corresponding to MUC1. Hydrogen fluoride deglycosylated milk mucin. Database link: **P15941**
Positive control	WB: MCF7 cell lysate. Flow Cyt: MCF7 cells. IHC-P: Human lung tissue. ICC: MCF7 cells.

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C long term. Avoid freeze / thaw cycle.
Storage buffer	Preservative: 0.02% Proclin 300 Constituent: 99% PBS
Purity	Protein A purified
Clonality	Monoclonal
Clone number	SM3
Isotype	IgG
Light chain type	lambda

Applications

The Abpromise guarantee	Our **Abpromise guarantee** covers the use of ab245695 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
ICC		Use a concentration of 10 µg/ml.
WB		Use a concentration of 1 µg/ml. Predicted molecular weight: 122 kDa.
Flow Cyt		Use a concentration of 10 µg/ml.
IHC-P		Use a concentration of 4 µg/ml. Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol. Microwave.

Target

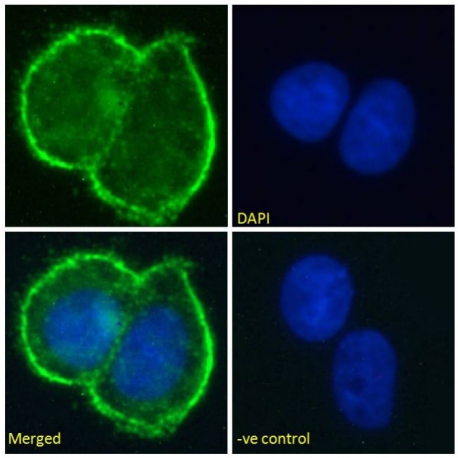
Function	The alpha subunit has cell adhesive properties. Can act both as an adhesion and an anti-adhesion protein. May provide a protective layer on epithelial cells against bacterial and enzyme attack. The beta subunit contains a C-terminal domain which is involved in cell signaling, through phosphorylations and protein-protein interactions. Modulates signaling in ERK, SRC and NF-kappa-B pathways. In activated T-cells, influences directly or indirectly the Ras/MAPK pathway. Promotes tumor progression. Regulates TP53-mediated transcription and determines cell fate in the genotoxic stress response. Binds, together with KLF4, the PE21 promoter element of TP53 and represses TP53 activity.
Tissue specificity	Expressed on the apical surface of epithelial cells, especially of airway passages, breast and uterus. Also expressed in activated and unactivated T-cells. Overexpressed in epithelial tumors, such as breast or ovarian cancer and also in non-epithelial tumor cells. Isoform Y is expressed in tumor cells only.
Involvement in disease	MUC1/CA 15-3 is used as a serological clinical marker of breast cancer to monitor response to breast cancer treatment and disease recurrence (PubMed:20816948). Decreased levels over time may be indicative of a positive response to treatment. Conversely, increased levels may indicate disease progression. At an early stage disease, only 21% of patients exhibit high MUC1/CA 15-3 levels, that is why CA 15-3 is not a useful screening test. Most antibodies target the highly immunodominant core peptide domain of 20 amino acid (APDTRPAPGSTAPPAHGVTS) tandem repeats. Some antibodies recognize glycosylated epitopes. Medullary cystic kidney disease 1
Sequence similarities	Contains 1 SEA domain.
Developmental stage	During fetal development, expressed at low levels in the colonic epithelium from 13 weeks of gestation.
Post-translational modifications	Highly glycosylated (N- and O-linked carbohydrates and sialic acid). O-glycosylated to a varying degree on serine and threonine residues within each tandem repeat, ranging from mono- to penta-glycosylation. The average density ranges from about 50% in human milk to over 90% in T47D breast cancer cells. Further sialylation occurs during recycling. Membrane-shed glycoproteins from kidney and breast cancer cells have preferentially sialyated core 1 structures, while secreted forms from the same tissues display mainly core 2 structures. The O-glycosylated content is overlapping in both these tissues with terminal fucose and galactose, 2- and 3-linked galactose, 3- and 3,6-linked GalNAc-ol and 4-linked GlcNAc predominating. Differentially O-

glycosylated in breast carcinomas with 3,4-linked GlcNAc. N-glycosylation consists of high-mannose, acidic complex-type and hybrid glycans in the secreted form MUC1/SEC, and neutral complex-type in the transmembrane form, MUC1/TM.
Proteolytic cleavage in the SEA domain occurs in the endoplasmic reticulum by an autoproteolytic mechanism and requires the full-length SEA domain as well as requiring a Ser, Thr or Cys residue at the P + 1 site. Cleavage at this site also occurs on isoform MUC1/X but not on isoform MUC1/Y. Ectodomain shedding is mediated by ADAM17.
Dual palmitoylation on cysteine residues in the CQC motif is required for recycling from endosomes back to the plasma membrane.
Phosphorylated on tyrosines and serine residues in the C-terminal. Phosphorylation on tyrosines in the C-terminal increases the nuclear location of MUC1 and beta-catenin. Phosphorylation by PKC delta induces binding of MUC1 to beta-catenin/CTNNB1 and thus decreases the formation of the beta-catenin/E-cadherin complex. Src-mediated phosphorylation inhibits interaction with GSK3B. Src- and EGFR-mediated phosphorylation on Tyr-1229 increases binding to beta-catenin/CTNNB1. GSK3B-mediated phosphorylation on Ser-1227 decreases this interaction but restores the formation of the beta-cadherin/E-cadherin complex. On T-cell receptor activation, phosphorylated by LCK. PDGFR-mediated phosphorylation increases nuclear colocalization of MUC1CT and CTNNB1.
The N-terminal sequence has been shown to begin at position 24 or 28.

Cellular localization

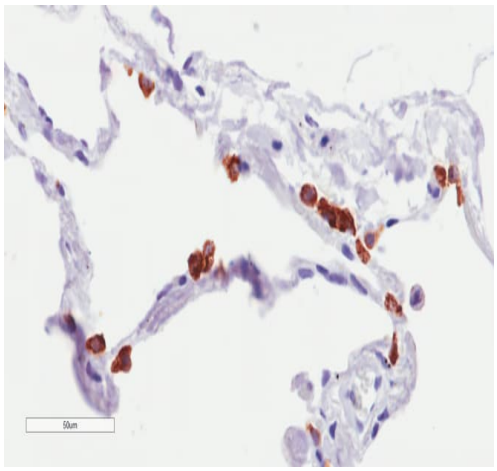
Secreted; Cell membrane. Cytoplasm. Nucleus. On EGF and PDGFRB stimulation, transported to the nucleus through interaction with CTNNB1, a process which is stimulated by phosphorylation. On HRG stimulation, colocalizes with JUP/gamma-catenin at the nucleus and Apical cell membrane. Exclusively located in the apical domain of the plasma membrane of highly polarized epithelial cells. After endocytosis, internalized and recycled to the cell membrane. Located to microvilli and to the tips of long filopodial protusions.

Images



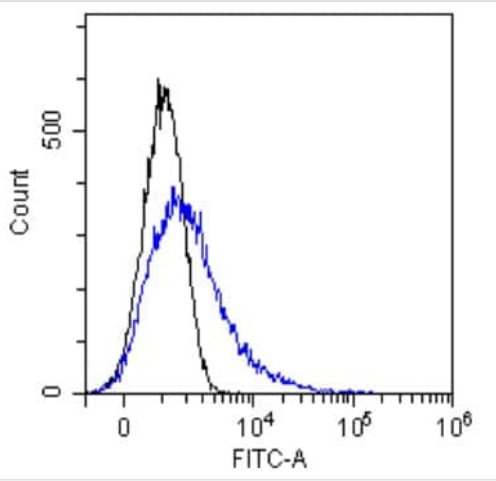
Immunocytochemistry - Anti-MUC1 antibody [SM3] (ab245695)

Immunocytochemical analysis of unpermeabailized paraformaldehyde fixed MCF7 (Human breast adenocarcinoma cell line) cells labeling MUC1 using ab245695 at 10 µg/ml for 1 hour (green) followed by Alexa Fluor® 488 secondary antibody (1 µg/ml). The nuclear counter stain is DAPI (blue).



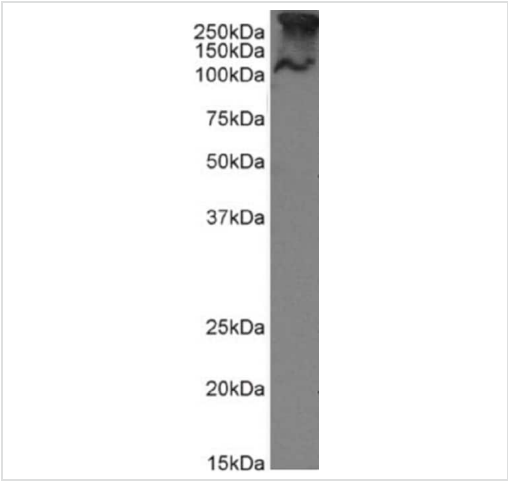
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MUC1 antibody [SM3] (ab245695)

Paraffin-embedded human lung tissue stained for MUC1 with ab245695 at 4 µg/ml, 30 mins in immunohistochemical analysis. Antigen retreival was acheived by microwaving in citrate buffer (pH 6), followed by blocking with protein block serum-free buffer. Samples were then incubated with an anti-rabbit IgG HRP secondary antibody for 20 mins followed by DAB (3,3′-diaminobenzidine), and counterstaining with hemotoxylin.



Flow Cytometry - Anti-MUC1 antibody [SM3] (ab245695)

MCF7 (Human breast adenocarcinoma cell line) cells were stained with unimmunized rabbit IgG antibody (black line) or ab245695 (blue line) at a concentration of 10 µg/ml for 30 mins at RT. After washing, bound antibody was detected using anti-rabbit IgG JK (FITC-conjugate) antibody at 2 µg/ml.



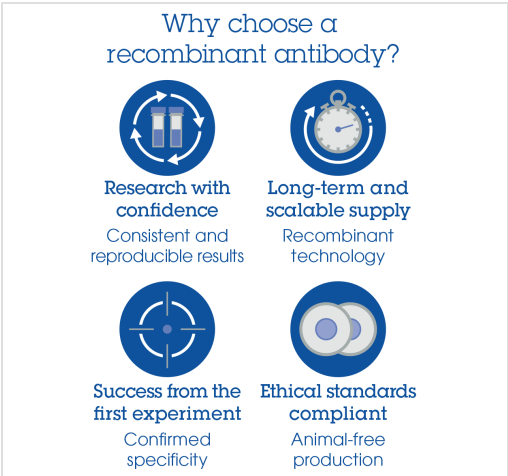
Western blot - Anti-MUC1 antibody [SM3] (ab245695)

Anti-MUC1 antibody [SM3] (ab245695) at 1 µg/ml (incubated for 1 hr) + MCF7 (Human breast adenocarcinoma cell line) cell lysate (RIPA buffer) at 35 µg

Predicted band size: 122 kDa

10% SDS PAGE gel.

Detected by chemiluminescence.



Anti-MUC1 antibody [SM3] (ab245695)

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