abcam

ab104450

Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3]

Recombinant

Key facts

Isotype	IgG2a
Host species	Rat
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Cell preparation containing CEACAM1 protein. The exact immunogen used to generate this antibody is proprietary information. Database link P13688
Clone number	YTH71.3
Purification technique	Ion exchange chromatography
Specificity	Recognizes Human CEACAM1. CEACAM1 is expressed by Human neutrophils and cells in some cases of colon carcinoma. Reacts with transfectants containing BGPa, NCA and CGM1a which are CEA subfamily members.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Recombinant fragment - Human
Dilution info	1/1000
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

IHC-Fr

Tested

Species	Human
Dilution info	1/200
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/250
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - Human
Dilution info	-

Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/100
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

Target data

See full target information CEACAM1

Function

Isoform 1. Cell adhesion protein that mediates homophilic cell adhesion in a calcium-independent manner (By similarity). Plays a role as coinhibitory receptor in immune response, insulin action and also functions as an activator during angiogenesis (PubMed:18424730, PubMed:23696226, PubMed:25363763). Its coinhibitory receptor function is phosphorylation- and PTPN6 -dependent, which in turn, suppress signal transduction of associated receptors by dephosphorylation of their downstream effectors. Plays a role in immune response, of T cells, natural killer (NK) and neutrophils (PubMed:18424730, PubMed:23696226). Upon TCR/CD3 complex stimulation, inhibits TCR-mediated cytotoxicity by blocking granule exocytosis by mediating homophilic binding to adjacent cells, allowing interaction with and phosphorylation by LCK and interaction with the TCR/CD3 complex which recruits PTPN6 resulting in dephosphorylation of CD247 and ZAP70 (PubMed:18424730). Also inhibits T cell proliferation and cytokine production through inhibition of JNK cascade and plays a crucial role in regulating autoimmunity and anti-tumor immunity by inhibiting T cell through its interaction with HAVCR2 (PubMed:25363763). Upon natural killer (NK) cells activation, inhibit

KLRK1-mediated cytolysis of CEACAM1-bearing tumor cells by trans-homophilic interactions with CEACAM1 on the target cell and lead to cis-interaction between CEACAM1 and KLRK1, allowing PTPN6 recruitment and then VAV1 dephosphorylation (PubMed:23696226). Upon neutrophils activation negatively regulates IL1B production by recruiting PTPN6 to a SYK-TLR4-CEACAM1 complex, that dephosphorylates SYK, reducing the production of reactive oxygen species (ROS) and lysosome disruption, which in turn, reduces the activity of the inflammasome. Down-regulates neutrophil production by acting as a coinhibitory receptor for CSF3R by down-regulating the CSF3R-STAT3 pathway through recruitment of PTPN6 that dephosphorylates CSF3R (By similarity). Also regulates insulin action by promoting INS clearance and regulating lipogenesis in liver through regulating insulin signaling (By similarity). Upon INS stimulation, undergoes phosphorylation by INSR leading to INS clearance by increasing receptor-mediated insulin endocytosis. This inernalization promotes interaction with FASN leading to receptor-mediated insulin degradation and to reduction of FASN activity leading to negative regulation of fatty acid synthesis. INSR-mediated phosphorylation also provokes a down-regulation of cell proliferation through SHC1 interaction resulting in decrease coupling of SHC1 to the MAPK3/ERK1-MAPK1/ERK2 and phosphatidylinositol 3-kinase pathways (By similarity). Functions as activator in angiogenesis by promoting blood vessel remodeling through endothelial cell differentiation and migration and in arteriogenesis by increasing the number of collateral arteries and collateral vessel calibers after ischemia. Also regulates vascular permeability through the VEGFR2 signaling pathway resulting in control of nitric oxide production (By similarity). Down-regulates cell growth in response to EGF through its interaction with SHC1 that mediates interaction with EGFR resulting in decrease coupling of SHC1 to the MAPK3/ERK1-MAPK1/ERK2 pathway (By similarity). Negatively regulates platelet aggregation by decreasing platelet adhesion on type I collagen through the GPVI-FcRgamma complex (By similarity). Inhibits cell migration and cell scattering through interaction with FLNA; interferes with the interaction of FLNA with RALA (PubMed:16291724). Mediates bile acid transport activity in a phosphorylation dependent manner (By similarity). Negatively regulates osteoclastogenesis (By similarity). Isoform 8. Cell adhesion protein that mediates homophilic cell adhesion in a calcium-independent manner (By similarity). Promotes populations of T cells regulating IgA production and secretion associated with control of the commensal microbiota and resistance to enteropathogens (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot

Storage information	Avoid freeze / thaw cycle

Notes

The production method has been switched from hybridoma to recombinant on 06th June 2025.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	CEACAM1 CEACAM3 and CEACAM6 are part of the carcinoembryonic antigen-related cell adhesion molecule family. CEACAM1 also known as CD66a has a mass of approximately 75 kDa. These proteins mainly localize to epithelial endothelial and certain immune cells. CEACAM1 and CEACAM6 participate in cell-cell adhesion while CEACAM3 functions more in immune cell response primarily by recognition and clearance of bacteria.
Biological function summary	These proteins serve different roles that impact cellular behavior. CEACAM1 can regulate cell signaling and immune response. It exists in complex forms that influence cell adhesion and signaling. CEACAM3 mainly appears in granulocytes playing a role in phagocytosis of bacteria. CEACAM6 is involved in modulating cell proliferation and invasion. Their involvement in immune regulation and cellular communication highlights their biological importance in maintaining normal tissue function and immune surveillance.
Pathways	These proteins are part of the immune response and cell adhesion pathways. CEACAM1 influences the lymphocyte activation pathway related with proteins like SHP-1 and SHP-2 that modulate signaling cascades. CEACAM3 is linked with the phagocytic pathway which involves interactions with other opsonin receptors. These pathways contribute to managing cellular response to external stimuli and maintaining homeostasis.
Associated diseases and disorders	These targets are linked with cancer development and inflammatory bowel disease. Overexpression of CEACAM1 and CEACAM6 occurs often in cancers such as colorectal and lung cancer where their abnormal regulation can lead to increased cell proliferation and metastasis. CEACAM3's role in immune response connects it with inflammatory conditions where faulty recognition or clearance mechanisms may arise. Understanding these proteins' roles in pathological conditions offers insights into potential therapeutic interventions and diagnostic markers.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

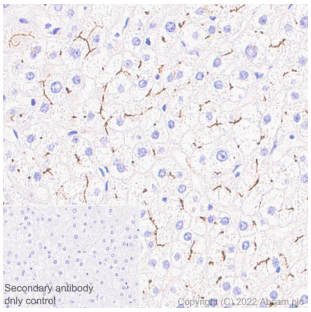
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

8 product images



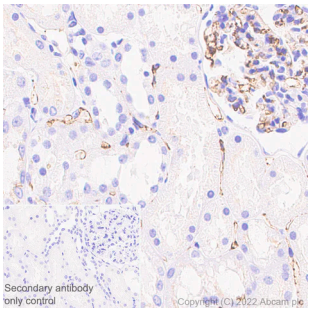
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human liver tissue using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Immunohistochemical analysis of paraffin-embedded Human liver tissue using ab104450 at a 1/100 dilution followed by a ready to use secondary antibody LeicaDS9800 (Bond™ Polymer Refine Detection).

Positive staining in bile ducts of human liver.
The section was incubated with ab104450 for 30 mins at room temperature, followed by anti-rat IgG antibody (ab102248) for 8 mins during the LeicaDS9800 kit staining procedure. The immunostaining was performed on a Leica Biosystems BOND® RX instrument
Hematoxylin was used as a counter stain.

Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, Epitope Retrieval Solution 1) for 20 mins.



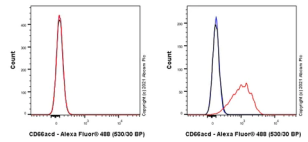
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human kidney tissue using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Immunohistochemical analysis of paraffin-embedded Human kidney tissue using ab104450 at a 1/100 dilution followed by a ready to use secondary antibody LeicaDS9800 (Bond™ Polymer Refine Detection).

Positive staining in blood vessel endothelium of human kidney.
The section was incubated with ab104450 for 30 mins at room temperature, followed by anti-rat IgG antibody (ab102248) for 8 mins during the LeicaDS9800 kit staining procedure. The immunostaining was performed on a Leica Biosystems BOND® RX instrument
Hematoxylin was used as a counter stain.

Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, Epitope Retrieval Solution 1) for 20 mins.

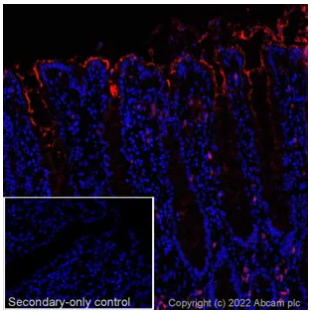


Flow Cytometry - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Flow Cytometry staining using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Flow cytometric analysis of HeLa (human cervical adenocarcinoma epithelial cell, Left) / HepG2 (human hepatocellular carcinoma epithelial cell, Right) cells labelling CEACAM1 + CEACAM3 + CEACAM6 with ab104450 at 1/1000 dilution (0.1&micor;g) followed by a secondary antibody Goat F(ab)2 Anti-Rat IgG Fc (Alexa Fluor® 488, ab150161)used at a 1/2000 dilution (Red) compared with an unlabelled control (cells without incubation with primary antibody and secondary antibody).

Negative control: HeLa (PMID: 11580753)
Gated on viable cells.



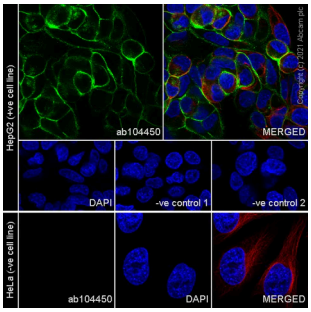
Immunohistochemistry (Frozen sections) - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Immunohistochemistry (Frozen sections) staining of Human colon (fresh) using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Immunohistochemical analysis of 10% PFA-fixed, 0.1% Triton X-100 permeabilized frozen Human colon (fresh) tissue labeling CEACAM1 + CEACAM3 + CEACAM6 with ab104450 at 1/200 dilution followed by ab150167 Goat Anti-Rat IgG H&L (Alexa Fluor® 647) preadsorbed at 1/1000 dilution.

Confocal image showing positive staining on human colon. The nuclear counterstain was DAPI (Blue).

Secondary antibody control: Secondary antibody is ab150167 Goat Anti-Rat IgG H&L (Alexa Fluor® 647) preadsorbed at 1/1000 dilution.



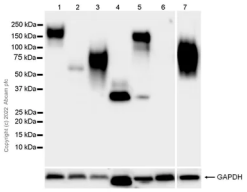
Immunocytochemistry/ Immunofluorescence - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Immunocytochemistry/ Immunofluorescence staining using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HepG2 cells labelling CEACAM1 + CEACAM3 + CEACAM6 with ab104450 at 1/250 dilution followed by secondary antibody ab150117 Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution (green).

ab179513 Anti-beta Tubulin rabbit monoclonal antibody was used as a counterstain at a 1/200 dilution followed by a secondary antibody ab150080 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) used at a 1/1000 dilution (red).
Confocal image showing membranous staining in HepG2 cell line.
Negative control: HeLa (PMID: 11580753).

Nuclear DNA was labelled with DAPI (shown in blue).



Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Western blot staining using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

Negative control: HeLa (PMID: 11580753)
The expression profile observed is consistent with what has been described in the literature (PMID:32064046 and PMID:24040308).

All lanes:
Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450) at 1/1000 dilution

Lane 1:
Untreated HepG2 (human hepatocellular carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
HepG2 whole cell lysate treated with PNGase F at 20 µg

Lane 3:
Untreated A549 (human lung carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 4:
A549 whole cell lysate treated with PNGase F at 20 µg

Lane 5:
HT-29 (human colorectal adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Lane 6:
HeLa (human cervix adenocarcinoma epithelial cell), whole cell lysate at 20 µg

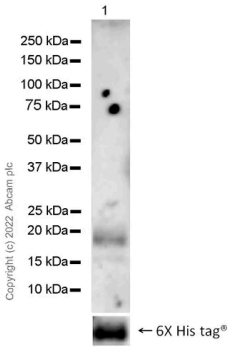
Lane 7:
BxPC-3 (human pancreas adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rat IgG H&L (HRP) (ab205720) at 1/20000 dilution

Observed band size: 40-160 kDa

Exposure time: 5s



Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Western blot staining of His-tagged human CEACAM3 recombinant protein(ab276444) using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

This blot was developed using a high sensitivity ECL substrate.
This antibody has low cross-reactivity with human CEACAM3.
All lanes:
Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450) at 1/1000 dilution

All lanes:
His-tagged human CEACAM3 recombinant protein(ab276444) at 20 ng

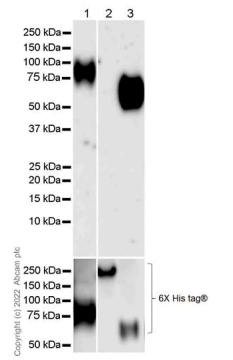
Secondary

All lanes:
Western blot - Goat Anti-Rat IgG H&L (HRP) (ab205720) at 1/10000 dilution

Developed using the ECL technique.

Observed band size: 18 kDa

Exposure time: 3min



Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450)

CEACAM1 + CEACAM3 + CEACAM6 Western blot staining using rat Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

All lanes:
Western blot - Anti-CEACAM1 + CEACAM3 + CEACAM6 antibody [YTH71.3] (ab104450) at 1/1000 dilution

Lane 1:
His-tagged human CEACAM1 recombinant protein at 10 ng

Lane 2:
His-tagged human CEACAM5 recombinant protein at 10 ng

Lane 3:
His-tagged human CEACAM6 recombinant protein at 10 ng

Secondary

All lanes:
Western blot - Goat Anti-Rat IgG H&L (HRP) (ab205720) at 1/10000 dilution

Observed band size: 40-160 kDa

Exposure time: 92s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.