abcam

ab4567

Anti-pan CEACAM antibody [D14HD11]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.01% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Native Full Length Protein corresponding to Human CEACAM3. Database link P40198
Clone number	D14HD11
Purification technique	Affinity purification Protein G
Specificity	Broadly reactive with high affinity (affinity to solid phase bound CEACAM 5: 2 x 10^{10} L/Mol [Jantscheff P *et al*.]) with most of the CEACAM molecules (except CEACAM 7 and CEACAM 8) transiently expressed on the cell surface of transfected BOSC23 cells. This antibody can be used to detect CEACAM 1 (BGP/CD66a), CEACAM 3 (CGM1/CD66d), CEACAM 4 (CGM 7), CEACAM 5 and CEACAM 6 (NCA/CD66c) on transfectants by flow cytometry.
Concentration	2 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Expected

Species	Human

Dilution info	-
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

ELISA

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-Fr

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
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
Storage information	Avoid freeze / thaw cycle

Notes

Antibodies produced from cDNA: Conventional technologies usually either generate antibodies against purified proteins, or against synthetic peptides based on amino acid sequences derived from DNA sequence data. Genetic immunization involves introducing the gene in the form of a cDNA directly into an animal which translates this cDNA into protein thus stimulating an immune response against the foreign protein. Although the synthetic peptide approach is comparable in speed, the quality of antibodies generated by genetic immunization is far superior. This is because the protein is made by the immunized animal, utilzing complex cellular mechanisms that allow it to gain a native conformation. Antibodies are then generated against a native protein, such as is found in the blood or tissues of its host species. Membrane-bound or secreted proteins often create problems for conventional antibody technology because in their native form, they are often modified by glycosylation, or in some cases exist as multiple membrane-spanning proteins that are not soluble following isolation or synthesis in recombinant systems. All of these problems are avoided if the immunized animal makes the protein itself. Antibodies generated by genetic immunization have been shown to have binding affinities to the protein in the sub-nanomolar range, which are approximately 100x higher than conventionally developed antibodies and much higher than single chain antibodies. Results confirm published data for much higher avidity of sera generated by genetic immunization as compared with that gained by immunization with a corresponding recombinant protein.

Supplementary info

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

Activity summary	Pan CEACAM also known as Carcinoembryonic Antigen-related Cell Adhesion Molecule represents a group of glycoproteins. It carries a molecular weight varying between 60 to 90 kDa depending on the glycosylation extent. These molecules express mainly on epithelial cells especially those in the gastrointestinal tract and respiratory system. CEACAMs serve in cell-cell adhesion playing significant roles in maintaining tissue architecture and intercellular communication.

Biological function summary	These proteins participate in immunoregulation and cellular adhesion. CEACAMs function as part of larger multi-protein complexes at the cell surface interacting with numerous ligands and receptors to modulate immune responses. These proteins can inhibit or promote cellular processes such as proliferation differentiation and apoptosis. This way they help in maintaining normal cellular function and adaptation to environmental changes.
Pathways	Pan CEACAM proteins influence pathways related to cellular communication and immune response. They involve particularly in the JAK/STAT and MAPK pathways. CEACAMs participate in initiating or modulating cascade signaling which involves proteins like STAT3 and ERK contributing to versatile cellular responses. These pathways help fine-tune cellular proliferation and survival particularly in response to external stimuli or stress.
Associated diseases and disorders	Pan CEACAMs hold significant implications in cancer and inflammatory diseases. Elevated CEACAM expression associates with several types of cancer including colorectal and lung cancer where it affects tumor progression and metastasis. It also connects with inflammatory bowel disease contributing to an altered immune response and epithelial damage. In these conditions CEACAMs interact with other proteins such as CEACAM1 and CEACAM5 influencing disease development and progression.

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.

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