abcam

ab309830

Alexa Fluor® 488 Anti-CAD antibody [EP710Y]

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Conjugation	Alexa Fluor® 488
Excitation/Emission	Ex: 495nm, Em: 519nm
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 30% Glycerol (glycerin, glycerine), 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EP710Y
Purification technique	Affinity purification Protein A
Specificity	ab40800 is specific to the N-terminus of CAD.
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/100
Notes	-

ICC/IF

Expected

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

Target data

See full target information CAD protein

Function	Multifunctional protein that encodes the first 3 enzymatic activities of the de novo pyrimidine pathway: carbamoylphosphate synthetase (CPSase; EC 6.3.5.5), aspartate transcarbamylase (ATCase; EC 2.1.3.2) and dihydroorotase (DHOase; EC 3.5.2.3). The CPSase-function is accomplished in 2 steps, by a glutamine-dependent amidotransferase activity (GATase) that binds and cleaves glutamine to produce ammonia, followed by an ammonium-dependent carbamoyl phosphate synthetase, which reacts with the ammonia, hydrogencarbonate and ATP to form carbamoyl phosphate. The endogenously produced carbamoyl phosphate is sequestered and channeled to the ATCase active site. ATCase then catalyzes the formation of carbamoyl-L-aspartate from L-aspartate and carbamoyl phosphate. In the last step, DHOase catalyzes the cyclization of carbamoyl aspartate to dihydroorotate.

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, Store in the dark

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

How are conjugated primary antibodies validated?
This conjugated primary antibody is released using a quantitative quality control method that evaluates binding affinity post-conjugation and efficiency of antibody labeling.
For suitable applications and species reactivity, please refer to the unconjugated version of this clone.

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	The CAD protein also known as carbamoyl-phosphate synthase 2/ aspartate transcarbamylase/ dihydroorotase serves an important mechanical role in pyrimidine biosynthesis. CAD is a multi-functional enzyme with a molecular mass of approximately 243 kDa and is expressed in the cytoplasm of many cell types. This complex protein organization enables it to catalyze the first three steps of de novo pyrimidine synthesis involving glutamine-dependent carbamoyl phosphate synthesis aspartate transcarbamylation and dihydroorotase activity. Such vital tasks establish CAD as an important player in the nucleotide biosynthesis landscape.
Biological function summary	The CAD enzyme facilitates the production of pyrimidine nucleotides that are necessary for DNA and RNA synthesis. CAD operates as a single-polypeptide chain trifunctional enzyme and is part of a larger protein complex involved in nucleic acid metabolism. Its enzymatic activities align closely to support cellular proliferation and differentiation processes that demand efficient nucleotide production. This link between CAD function and nucleotide availability underlines its importance in ensuring smooth cell cycle progression and maintenance.
Pathways	CAD integrates into the broader nucleotide metabolism and pyrimidine biosynthesis pathways. The CAD protein directly interacts with other key enzymes such as UMP synthase which furthers the conversion of its product dihydroorotate to UMP. OMP decarboxylase also acts downstream reflecting CAD's role in ensuring continuity and efficiency in pyrimidine synthesis. These interactions demonstrate

	CAD's central involvement in maintaining the nucleotide pool required for DNA synthesis and repair.
Associated diseases and disorders	CAD mutations and dysregulations link to neurological disorders and cancer. Neurological conditions such as CAD deficiency can result from impaired pyrimidine synthesis affecting brain development and function. Additionally enhanced CAD activity associates with certain cancers where its upregulated pyrimidine production supports rapid tumor cell proliferation. In these disease contexts CAD's interaction with proteins involved in cellular proliferation pathways such as c-Myc in cancers highlights its impact on health and disease states.

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

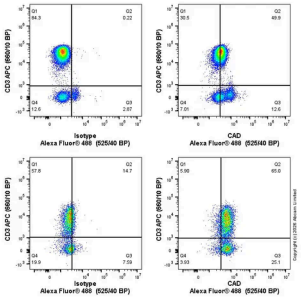
We do not recommend this combination. It is not covered by our product promise.

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.

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Terms & Conditions.

1 product image



Flow Cytometry (Intracellular) - Alexa Fluor® 488 Anti-CAD antibody [EP710Y] (ab309830)

CAD Flow Cytometry (Intracellular) staining of Human peripheral mononuclear cells (PBMCs) using rabbit Anti-CAD antibody

Flow cytometry scatter plots showing untreated human peripheral mononuclear cells (PBMCs) (top) and PBMCs activated with 5 µg/ml PHA for 18h (bottom), either stained with ab309830 (right) or isotype control (left). The cells were fixed using BD CytoFix/CytoPerm™ (20 min). The cells were

incubated in 1x PBS containing 10 µg/ml human IgG and 10% normal goat serum to block FC receptors and non-specific protein-protein interaction followed by the antibody (ab309830) (1x 10^6 in 100µl at 5 µg/ml (1/100)) for 30min on ice. Isotype control antibody was Recombinant Alexa Fluor® 488 Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab199091). The cells were simultaneously stained with CD3.

Acquisition of >30000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

This data was acquired using a Beckman Coulter CytoFlexLX flow cytometer.

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