

Phospho-CAD (Ser1859) Antibody



Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

For Research Use Only. Not for Use in Diagnostic Procedures.

| Applications: | Reactivity: | Sensitivity: | MW (kDa): | Source/Isotype: | UniProt ID: | Entrez-Gene Id: |
|---------------|-------------|--------------|-----------|-----------------|-------------|-----------------|
| W | H M R Mk | Endogenous | 240 | Rabbit | #P27708 | 790 |

Product Usage Information

Application

Western Blotting

Dilution

1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Phospho-CAD (Ser1859) Antibody recognizes endogenous levels of CAD protein only when phosphorylated at Ser1859.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser1859 of human CAD protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

CAD is essential for the *de novo* synthesis of pyrimidine nucleotides and possesses the following enzymatic activities: glutamine amidotransferase, carbamoyl-phosphate synthetase, aspartate transcarbamoylase, and dihydroorotase. Thus, the enzyme converts glutamine to uridine monophosphate, a common precursor of all pyrimidine bases, and it is necessary for nucleic acid synthesis (1). In resting cells, CAD is localized mainly in the cytoplasm where it carries out pyrimidine synthesis. As proliferating cells enter S phase, MAP Kinase (Erk1/2) phosphorylates CAD at Thr456, resulting in CAD translocation to the nucleus. As cells exit S phase, CAD is dephosphorylated at Thr456 and phosphorylated at Ser1406 by PKA, returning the pathway to basal activity (2). Various research studies have shown increased expression of CAD in several types of cancer, prompting the development of pharmacological inhibitors such as PALA. Further studies have identified CAD as a potential predictive early marker of prostate cancer relapse (3). mTORC1 is a protein kinase that works to regulate the growth and proliferation of cells by sensing and integrating various growth signals. S6 kinase 1 (S6K1) is a downstream ribosomal protein target of mTORC1 and directly phosphorylates Ser1859 on CAD. This phosphorylation stimulates the first three steps of the *de novo* pyrimidine synthesis and thus helps to advance the cells overall progression through S phase of the cell cycle (4,5).

Background References

1. Coleman, P.F. et al. (1977) *J Biol Chem* 252, 6379-85.
2. Sigoillot, F.D. et al. (2005) *J Biol Chem* 280, 25611-20.
3. Morin, A. et al. (2012) *FASEB J* 26, 460-7.
4. Ben-Sahra, I. et al. (2013) *Science* 339, 1323-8.
5. Robitaille, A.M. et al. (2013) *Science* 339, 1320-3.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

Trademarks and Patents

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

All other trademarks are the property of their respective owners. Visit cellsignal.com/trademarks for more information.

Limited Uses

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's

terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.