

DAPK3/ZIPK Antibody

✓ 100 µl
(10 Western mini-blot)

New 04/08

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This product is for *in vitro* research use only and is not intended for use in humans or animals.

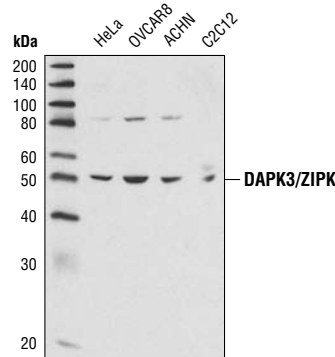
Applications	Species Cross-Reactivity*	Molecular Wt.	Source
W Endogenous	H, M, R, (Mk)	52 kDa	Rabbit

Background: Death-associated protein kinase (DAPK) is a Ca²⁺/calmodulin-regulated serine/threonine kinase that participates in a wide range of apoptotic signals including interferon- γ , tumor necrosis factor α , Fas, activated c-Myc, and detachment from the extracellular matrix. In addition to the kinase domain and calmodulin regulatory segment, DAPK also has eight ankyrin repeats, a cytoskeleton binding region, and a conserved death domain (1-3). Deletion of the calmodulin-regulatory domain generates a constitutively active mutant kinase. Ectopic expression of wild-type DAPK induced cell death in HeLa cells. Conversely, expression of a catalytically inactive mutant protected cells from interferon- γ -induced cell death (4). The catalytic domain of DAPK has very high sequence similarity to vertebrate myosin light chain kinase (MLCK) and a RXX(S/T)X motif derived from myosin light chain protein was shown to be phosphorylated *in vitro* by DAPK (5).

The DAPK family consists of several kinases including DAPK, DAPK2/DRP-1 (6), and DAPK3/ZIPK/DLK (7-9) with homology in their catalytic domain. Overexpression of DAPK3/ZIPK, but not a catalytically inactive mutant, can induce apoptosis (7). DAPK3 was also identified as a myosin light chain kinase, demonstrating ability to phosphorylate the regulatory light chain of myosin II in a Ca²⁺/calmodulin-independent manner (8). In addition to an amino-terminal kinase domain, DAPK3 contains a carboxy-terminal leucine zipper domain that mediates interaction with leucine zipper transcription factors such as ATF4 (7). DAPK3 is predominantly localized to the nucleus and has been found in PML oncogenic domains (PODs) associated with DAXX and PAR-4, and can phosphorylate PAR-4 *in vitro* (10,11). In addition, DAPK3 can phosphorylate STAT3 at Ser727 to enhance its transcriptional activity (12).

Specificity/Sensitivity: DAPK3/ZIPK Antibody detects endogenous levels of total DAPK3/ZIPK protein.

Source/Purification: Polyclonal antibodies were prepared by immunizing rabbits with a synthetic peptide (KLH-coupled) corresponding to residues at the carboxyl terminus of human DAPK3/ZIPK. Antibodies were purified by protein A and peptide affinity chromatography.



Western blot analysis of extracts from various cell lines using DAPK3/ZIPK Antibody.

Background References:

- (1) Kimchi, A. (1999) *Ann Rheum Dis* 58, 114-119.
- (2) Cohen, O. et al. (1999) *J Cell Biol* 146, 141-148.
- (3) Deiss, L.P. et al. (1995) *Genes Dev* 9, 15-30.
- (4) Cohen, O. et al. (1997) *EMBO J* 16, 998-1008.
- (5) Velentza, A.V. et al. (2001) *J Biol Chem* 276, 38956-38965.
- (6) Inbal, B. et al. (2000) *Mol Cell Biol* 20, 1044-54.
- (7) Kawai, T. et al. (1998) *Mol Cell Biol* 18, 1642-51.
- (8) Murata-Hori, M. et al. (1999) *FEBS Lett* 451, 81-4.
- (9) Kögel, D. et al. (1998) *Oncogene* 17, 2645-54.
- (10) Page, G. et al. (1999) *Oncogene* 18, 7265-73.
- (11) Kawai, T. et al. (2003) *Mol Cell Biol* 23, 6174-86.
- (12) Sato, N. et al. (2005) *Int Immunol* 17, 1543-52.

Entrez-Gene ID #1613

Swiss-Prot Acc. #043293

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.*

*Species cross-reactivity is determined by Western blot.

Recommended Antibody Dilutions:

Western blotting 1:1000

Companion Products:

- DAP1 Antibody #2282
- DAP3 Antibody #2172
- DAP5 Antibody #2182
- DAPK1 Kinase #7647
- DAPK3 Kinase #7441
- Phospho-Stat3 (Ser727) (6E4) Mouse mAb #9136
- Phospho-Stat3 (Ser727) Antibody #9134
- PAR-4 Antibody #2328
- Phospho-PAR-4 (Thr163) Antibody #2329
- Daxx (25C12) Rabbit mAb #4533
- Phototope®-HRP Western Blot Detection System, Anti-rabbit IgG, HRP-linked Antibody #7071
- Anti-rabbit IgG, HRP-linked Antibody #7074
- Prestained Protein Marker, Broad Range (Premixed Format) #7720
- Biotinylated Protein Ladder Detection Pack #7727
- 20X LumiGLO® Reagent and 20X Peroxide #7003

IMPORTANT: For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E—ELISA D—Delfia®
Species Cross-Reactivity Key: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken X—Xenopus Z—zebra fish B—bovine All—all species expected
 Species enclosed in parentheses are predicted to react based on 100% sequence homology.

Western Immunoblotting Protocol (Primary Antibody Incubation in BSA)

For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

A Solutions and Reagents

NOTE: Prepare solutions with Milli-Q or equivalently purified water.

- 1X Phosphate Buffered Saline (PBS)
- 1X SDS Sample Buffer:** 62.5 mM Tris-HCl (pH 6.8 at 25°C), 2% w/v SDS, 10% glycerol, 50 mM DTT, 0.01% w/v bromophenol blue or phenol red
- Transfer Buffer:** 25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)
- 10X Tris Buffered Saline (TBS):** To prepare 1 liter of 10X TBS: 24.2 g Tris base, 80 g NaCl; adjust pH to 7.6 with HCl (use at 1X).
- Nonfat Dry Milk (weight to volume [w/v])
- Blocking Buffer:** 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk; for 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).
- Wash Buffer:** 1X TBS, 0.1% Tween-20 (TBS/T)
- Bovine Serum Albumin (BSA)
- Primary Antibody Dilution Buffer:** 1X TBS, 0.1% Tween-20 with 5% BSA; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g BSA and mix well. While stirring, add 20 µl Tween-20 (100%).
- Phototope®-HRP Western Blot Detection System #7071:** Includes biotinylated protein ladder, secondary anti-rabbit (#7074) antibody conjugated to horseradish peroxidase (HRP), anti-biotin antibody conjugated to HRP, LumiGLO® chemiluminescent reagent and peroxide.
- Prestained Protein Marker, Broad Range (Premixed Format) #7720
- Biotinylated Protein Ladder Detection Pack #7727
- Blotting Membrane:** This protocol has been optimized for nitrocellulose membranes, which CST recommends. PVDF membranes may also be used.

B Protein Blotting

A general protocol for sample preparation is described below.

- Treat cells by adding fresh media containing regulator for desired time.
- Aspirate media from cultures; wash cells with 1X PBS; aspirate.
- Lyse cells by adding 1X SDS sample buffer (100 µl per well of 6-well plate or 500 µl per plate of 10 cm diameter plate). Immediately scrape the cells off the plate and transfer the extract to a microcentrifuge tube. Keep on ice.
- Sonicate for 10–15 seconds to shear DNA and reduce sample viscosity.
- Heat a 20 µl sample to 95–100°C for 5 minutes; cool on ice.
- Microcentrifuge for 5 minutes.
- Load 20 µl onto SDS-PAGE gel (10 cm x 10 cm).

NOTE: CST recommends loading prestained molecular weight markers (#7720, 10 µl/lane) to verify electrotransfer and biotinylated protein ladder (#7727, 10 µl/lane) to determine molecular weights.

- Electrotransfer to nitrocellulose or PVDF membrane.

C Membrane Blocking and Antibody Incubations

NOTE: Volumes are for 10 cm x 10 cm (100 cm²) of membrane; for different sized membranes, adjust volumes accordingly.

- (Optional) After transfer, wash nitrocellulose membrane with 25 ml TBS for 5 minutes at room temperature.
- Incubate membrane in 25 ml of blocking buffer for 1 hour at room temperature.
- Wash three times for 5 minutes each with 15 ml of TBS/T.
- Incubate membrane and primary antibody (at the appropriate dilution) in 10 ml primary antibody dilution buffer with gentle agitation overnight at 4°C.
- Wash three times for 5 minutes each with 15 ml of TBS/T.
- Incubate membrane with HRP-conjugated secondary antibody (1:2000) and HRP-conjugated anti-biotin antibody (1:1000) to detect biotinylated protein markers in 10 ml of blocking buffer with gentle agitation for 1 hour at room temperature.
- Wash three times for 5 minutes each with 15 ml of TBS/T.

D Detection of Proteins

- Incubate membrane with 10 ml LumiGLO® (0.5 ml 20X LumiGLO®, 0.5 ml 20X Peroxide and 9.0 ml Milli-Q water) with gentle agitation for 1 minute at room temperature.

NOTE: LumiGLO® substrate can be further diluted if signal response is too fast.

- Drain membrane of excess developing solution (do not let dry), wrap in plastic wrap and expose to x-ray film. An initial 10-second exposure should indicate the proper exposure time.

NOTE: Due to the kinetics of the detection reaction, signal is most intense immediately following LumiGLO® incubation and declines over the following 2 hours.