

Rabbit CDK9 Polyclonal Antibody | anti-CDK9 antibody

CDK9 Antibody

CATALOG #	HOST	REACTIVITY	APPLICATIONS
AAA326228	Rabbit	Human, Mouse, Rat	ELISA, Immunocytochemistry, Immunofluorescence, Immunohistochemistry, Western Blot

PRODUCT SYNONYMS

CDK9; Polyclonal Antibody; CDK9 Antibody; C-2K; CDC2 related kinase; CDC2L4; Cdk 9; Cdk9; CDK9_HUMAN; Cell division cycle 2-like protein kinase 4; Cell division protein kinase 9; CTK1; Cyclin dependent kinase 9; Cyclin-dependent kinase 9; PITALRE; Serine/threonine-protein kinase PITALRE; TAK; Tat associated kinase complex catalytic subunit; anti-CDK9 antibody

PRODUCT SPECIFICATIONS

Host	Rabbit
Reactivity	Human, Mouse, Rat
Clonality	Polyclonal
Isotype	IgG
Specificity	CDK9 antibody detects endogenous levels of total CDK9
Purity/Purification	The antiserum was purified by peptide affinity chromatography using SulfoLink Coupling Resin.
Form/Format	Liquid Phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Concentration	1mg/ml (varies by lot)
Sequence Length	372
Applicable Applications for anti-CDK9 antibody	ELISA, ICC (Immunocytochemistry), IF (Immunofluorescence), IHC (Immunohistochemistry), WB (Western Blot)
Immunogen	A synthesized peptide derived from human CDK9
Subcellular Location	Nucleus.
Tissue Specificity	Ubiquitous.
Predicted Cross Reactivity	Pig, Zebrafish, Bovine, Horse, Sheep, Dog, Chicken
Similarity	Pig (100%), Zebrafish (100%), Bovine (100%), Horse (100%), Sheep (100%), Dog (100%), Chicken (100%)
Conjugation	Unconjugated
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.



WB (Western Blot)
Western blot analysis of extracts from rat liver, using CDK9 Antibody.



IF (Immunofluorescence)
AAA326228 staining HepG2 cells by IF/ICC. The sample were fixed with PFA and permeabilized in 0.1% Triton X-100, then blocked in 10% serum for 45 minutes at 25 degree C. The primary antibody was diluted at 1/200 and incubated with the sample for 1 hour at 37 degree C. An Alexa Fluor 594 conjugated goat anti-rabbit IgG (H+L) antibody, diluted at 1/600, was used as secondary antibody.



WB (Western Blot)
Western blot analysis of Hela whole cell lysates, using CDK9 Antibody. The lane on the left is treated with the antigen-specific peptide.



IHC (Immunohistochemistry)
AAA326228 at 1/100 staining Mouse lung tissue by IHC-P. The sample was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The sample was then blocked and incubated with the antibody for 1.5 hours at 22 degree C. An HRP conjugated goat anti-rabbit antibody was used as the secondary.

Related Product Information for anti-CDK9 antibody

Description: The protein encoded by this gene is a member of the cyclin-dependent protein kinase (CDK) family. CDK family members are highly similar to the gene products of *S. cerevisiae* cdc28, and *S. pombe* cdc2, and known as important cell cycle regulators. This kinase was found to be a component of the multiprotein complex TAK/P-TEFb, which is an elongation factor for RNA polymerase II-directed transcription and functions by phosphorylating the C-terminal domain of the largest subunit of RNA polymerase II. This protein forms a complex with and is regulated by its regulatory subunit cyclin T or cyclin K. HIV-1 Tat protein was found to interact with this protein and cyclin T, which suggested a possible involvement of this protein in AIDS.

Function: Protein kinase involved in the regulation of transcription. Member of the cyclin-dependent kinase pair (CDK9/cyclin-T) complex, also called positive transcription elongation factor b (P-TEFb), which facilitates the transition from abortive to productive elongation by phosphorylating the CTD (C-terminal domain) of the large subunit of RNA polymerase II (RNAP II) POLR2A, SUPT5H and RDBP. This complex is inactive when in the 7SK snRNP complex form. Phosphorylates EP300, MYOD1, RPB1/POLR2A and AR, and the negative elongation factors DSIF and NELF. Regulates cytokine inducible transcription networks by facilitating promoter recognition of target transcription factors (e.g. TNF-inducible RELA/p65 activation and IL-6-inducible STAT3 signaling). Promotes RNA synthesis in genetic programs for cell growth, differentiation and viral pathogenesis. P-TEFb is also involved in cotranscriptional histone modification, mRNA processing and mRNA export. Modulates a complex network of chromatin modifications including histone H2B monoubiquitination (H2Bub1), H3 lysine 4 trimethylation (H3K4me3) and H3K36me3; integrates phosphorylation during transcription with chromatin modifications to control co-transcriptional histone mRNA processing. The CDK9/cyclin-K complex has also a kinase activity towards CTD of RNAP II and can substitute for CDK9/cyclin-T P-TEFb in vitro. Replication stress response protein; the CDK9/cyclin-K complex is required for genome integrity maintenance, by promoting cell cycle recovery from replication arrest and limiting single-stranded DNA amount in response to replication stress, thus reducing the breakdown of stalled replication forks and avoiding DNA damage. In addition, probable function in DNA repair of isoform 2 via interaction with KU70/XRCC6. Promotes cardiac myocyte enlargement. RPB1/POLR2A phosphorylation on 'Ser-2' in CTD activates transcription. AR phosphorylation modulates AR transcription factor promoter selectivity and cell growth. DSIF and NELF phosphorylation promotes transcription by inhibiting their negative effect. The phosphorylation of MYOD1 enhances its transcriptional activity and thus promotes muscle differentiation.

Subunit Structure: Component of the super elongation complex (SEC), at least composed of EAF1, EAF2, CDK9, MLLT3/AF9, AFF (AFF1 or AFF4), the P-TEFb complex and ELL (ELL, ELL2 or ELL3). Associates with CCNT1/cyclin-T1, CCNT2/cyclin-T2 (isoform A and isoform B) or CCNK/cyclin-K to form active P-TEFb. P-TEFb forms a complex with AFF4/AF5Q31 and is part of the super elongation complex (SEC). Component of a complex which is composed of at least 5 members: HTATSF1/Tat-SF1, P-TEFb complex, RNA pol II, SUPT5H, and NCL/nucleolin. Associates with UBR5 and forms a transcription regulatory complex composed of CDK9, RNAP II, UBR5 and TFIIS/TCEA1 that can stimulate target gene transcription (e.g. gamma fibrinogen/FGG) by recruiting their promoters. Component of the 7SK snRNP inactive complex which is composed of at least 8 members: P-TEFb (composed of CDK9 and CCNT1/cyclin-T1), HEXIM1, HEXIM2, LARP7, BCDIN3, SART3 proteins and 7SK and U6 snRNAs. This inactive 7SK snRNP complex can also interact with NCOR1 and HDAC3, probably to regulate CDK9 acetylation. Release of P-TEFb from P-TEFb/7SK snRNP complex requires both PP2B to transduce calcium Ca²⁺ signaling in response to stimuli (e.g. UV or hexamethylene bisacetamide (HMB)), and PPP1CA to dephosphorylate Thr-186. This released P-TEFb remains inactive in the pre-initiation complex with BRD4 until new Thr-186 phosphorylation occurs after the synthesis of a short RNA. Interacts with BRD4, probably to target chromatin binding. Interacts with the acidic/proline-rich region of HIV-1 and HIV-2 Tat via T-loop region, and is thus required for HIV to hijack host transcription machinery during its replication through cooperative binding to viral TAR RNA. Interacts with activated nuclear STAT3 and RELA/p65. Binds to AR and MYOD1. Forms a complex composed of CDK9, CCNT1/cyclin-T1, EP300 and GATA4 that stimulates hypertrophy in cardiomyocytes. The large PER complex involved in the repression of transcriptional termination is composed of at least PER2, CDK9, DDX5, DHX9, NCBP1 and POLR2A. Isoform 3 binds to KU70/XRCC6. Interacts with herpes simplex virus 1 protein ICP22; this interaction inhibits the positive transcription elongation factor b (P-TEFb). Interacts with HSF1 (PubMed:27189267). Interacts with TBX21 (By similarity).

Post-translational Modifications: Autophosphorylation at Thr-186, Ser-347, Thr-350, Ser-353, Thr-354 and Ser-357 triggers kinase activity by promoting cyclin and substrate binding (e.g. HIV TAT) upon conformational changes. Thr-186 phosphorylation requires the calcium Ca²⁺ signaling pathway, including CaMK1D and calmodulin. This inhibition is relieved by Thr-29 dephosphorylation. However, phosphorylation at Thr-29 is inhibitory within the HIV transcription initiation complex. Phosphorylation at Ser-175 inhibits kinase activity. Can be phosphorylated on either Thr-362 or Thr-363 but not on both simultaneously (PubMed:18566585). Dephosphorylation of Thr-186 by PPM1A and PPM1B blocks CDK9 activity and may lead to CDK9 proteasomal degradation. However, PPP1CA-mediated Thr-186 dephosphorylation is required to release P-TEFb from its inactive P-TEFb/7SK snRNP complex.

Dephosphorylation of C-terminus Thr and Ser residues by protein phosphatase-1 (PP1) triggers CDK9 activity, contributing to the activation of HIV-1 transcription. N6-acetylation of Lys-44 by CBP/p300 promotes kinase activity, whereas acetylation of both Lys-44 and Lys-48 mediated by PCAF/KAT2B and GCN5/KAT2A reduces kinase activity. The acetylated form associates with PML bodies in the nuclear matrix and with the transcriptionally silent HIV-1 genome; deacetylated upon transcription stimulation. Polyubiquitinated and thus activated by UBR5. This ubiquitination is promoted by TFIIS/TCEA1 and favors 'Ser-2' phosphorylation of RPB1/POLR2A CTD.

Similarity: Belongs to the protein kinase superfamily. CMGC Ser/Thr protein kinase family. CDC2/CDKX subfamily.

NCBI AND UNIPROT INFORMATION

NCBI GI #	4502747
NCBI GeneID	1025
NCBI Accession #	NP_001252.1
NCBI GenBank Nucleotide #	NM_001261.3
UniProt Accession #	P50750; Q5JU24; Q5JU25; Q5U006; Q96TF1
Molecular Weight	Observed: 43 kDa Predicted: 43 kDa
NCBI Official Full Name	cyclin-dependent kinase 9
NCBI Official Synonym Full Names	cyclin dependent kinase 9
NCBI Official Symbol	CDK9
NCBI Official Synonym Symbols	TAK; C-2k; CTK1; CDC2L4; PITALRE
NCBI Protein Information	cyclin-dependent kinase 9
UniProt Protein Name	Cyclin-dependent kinase 9
UniProt Gene Name	CDK9
UniProt Synonym Gene Names	CDC2L4; TAK

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