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CDK7 Rabbit pAb

Catalog # AP100214

Product Information

Application	WB, IHC-P, IHC-F, IF
Primary Accession	P50613
Other Accession	P50613
Reactivity	Rat, Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Calculated MW	39038
Physical State	Liquid
Immunogen	KLH conjugated synthetic peptide derived from human CDK7
Epitope Specificity	1-80/346
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SIMILARITY	Belongs to the protein kinase superfamily. CMGC Ser/Thr protein kinase family. CDC2/CDKX subfamily. Contains 1 protein kinase domain.
SUBUNIT	Associates primarily with cyclin-H (CCNH) and MAT1 to form the CAK complex. CAK can further associate with the core-TFIIH to form the TFIIH basal transcription factor; this complex is sensitive to UV light. The CAK complex binds to p53/TP53 in response to DNA damage. Interacts with CDK2, SF1/NR5A1, PUF60 and PRKCI.
Post-translational modifications	Phosphorylation of Ser-164 during mitosis inactivates the enzyme. Phosphorylation of Thr-170 is required for activity. Phosphorylated at Ser-164 and Thr-170 by CDK2.
Important Note	This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.
Background Descriptions	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 Saccharomyces cerevisiae cdc28, and Schizosaccharomyces pombe cdc2, and are known to be important regulators of cell cycle progression. This protein forms a trimeric complex with cyclin H and MAT1, which functions as a Cdk-activating kinase (CAK). It is an essential component of the transcription factor TFIIH, that is involved in transcription initiation and DNA repair. This protein is thought to serve as a direct link between the regulation of transcription and the cell cycle.

Additional Information

Gene ID	1022
Other Names	CAK; CAK1; CDKN7; HCAK; MO15; STK1; p39MO15; CDK7_HUMAN; CDK7; 39 kDa protein kinase (p39 Mo15); CDK-activating kinase 1; Cell division protein kinase 7; Serine/threonine-protein kinase 1; TFIIH basal transcription factor complex kinase subunit; 2.7.11.22; 2.7.11.23; cyclin dependent kinase 7;

	cyclin-dependent kinase 7 (homolog of Xenopus MO15 cdk-activating kinase); cyclin-dependent kinase 7 (MO15 homolog, Xenopus laevis, cdk-activating kinase)
Dilution	WB=1:500-2000,IHC-P=1:100-500,IHC-F=1:100-500,ICC/IF=1:100-500,IF=1:100-500
Storage	Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C.

Protein Information

Name	CDK7
Synonyms	CAK, CAK1, CDKN7, MO15, STK1
Function	Serine/threonine kinase involved in cell cycle control and in RNA polymerase II-mediated RNA transcription (PubMed:9852112, PubMed:19136461, PubMed:26257281, PubMed:28768201). As a cyclin- dependent kinase, CDK7 is activated by the binding to cyclin-H/CCNH and the CDK-activating kinase assembly factor MAT1 (PubMed:41100585). Catalytic subunit of the CDK-activating kinase (CAK) complex, a master regulator of CDK activity by catalyzing the activating threonine phosphorylation of CDKs (PubMed:41100585). CAK activates major mediators of cell cycle control, including CDK1, CDK2, CDK4 and CDK6, and plays a key role in regulating cell cycle progression (PubMed:41100585). CAK complexed to the core-TFIIH basal transcription factor activates RNA polymerase II by serine phosphorylation of the CTD of POLR2A, allowing its escape from the promoter and elongation of the transcripts (PubMed:9852112). Initiates transcription by RNA polymerase II by mediating phosphorylation of POLR2A at 'Ser-5' of the repetitive C-terminal domain (CTD) when POLR2A is in complex with DNA, promoting dissociation from DNA and initiation (PubMed:19136461, PubMed:26257281, PubMed:28768201). Phosphorylates SPT5/SUPT5H, SF1/NR5A1, POLR2A, p53/TP53, CDK1, CDK2, CDK4, CDK6 and CDK11B/CDK11 (PubMed:9372954, PubMed:9840937, PubMed:19136461, PubMed:26257281, PubMed:28768201, PubMed:41100585, PubMed:41100585). Its expression and activity are constant throughout the cell cycle. Upon DNA damage, triggers p53/TP53 activation by phosphorylation, but is inactivated in turn by p53/TP53; this feedback loop may lead to an arrest of the cell cycle and of the transcription, helping in cell recovery, or to apoptosis. Required for DNA-bound peptides-mediated transcription and cellular growth inhibition.
Cellular Location	Nucleus. Cytoplasm. Cytoplasm, perinuclear region. Note=Colocalizes with PRKCI in the cytoplasm and nucleus (PubMed:15695176). Translocates from the nucleus to cytoplasm and perinuclear region in response to DNA-bound peptides (PubMed:19071173).
Tissue Location	Ubiquitous.

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