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CDK7 Antibody

Rabbit mAb
Catalog # AP90821

Product Information

Application	WB
Primary Accession	P50613
Reactivity	Human
Clonality	Monoclonal
Other Names	Cyclin-dependent kinase 7; p39 Mo15; CDK-activating kinase 1; Cell division protein kinase 7; CDK7; CAK; CAK1; CDKN7; MO15; STK1;
Isotype	Rabbit IgG
Host	Rabbit
Calculated MW	39038

Additional Information

Dilution	WB 1:1000~1:2000
Purification	Affinity-chromatography
Immunogen	A synthesized peptide derived from human CDK7
Description	CDK-activating kinase (CAK) is a complex of CDK7 and cyclin H. The complex is involved in cell cycle regulation by phosphorylating an activating residue in the T-loop domain of cdks. Regulation of CAK activity is mediated by T-loop phosphorylation and by association with MAT1, both of which enhance its kinase activity toward the CTD of RNA polymerase II and other substrates such as p53.
Storage Condition and Buffer	Rabbit IgG in phosphate buffered saline , pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol. Store at +4°C short term. Store at -20°C long term. Avoid freeze / thaw cycle.

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). Cyclin-dependent kinases (CDKs) are activated by the binding to a cyclin and mediate the progression through the cell cycle. Each different complex controls a specific transition between 2 subsequent phases in the cell cycle. Required for both activation and complex formation of CDK1/cyclin-B during G2-M transition, and for activation of CDK2/cyclins during G1-S transition (but not complex formation). CDK7 is the catalytic subunit of the CDK-activating kinase (CAK) complex. 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). 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). CAK activates the cyclin-associated kinases CDK1, CDK2, CDK4 and CDK6 by threonine phosphorylation, thus regulating cell cycle progression. 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). 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.

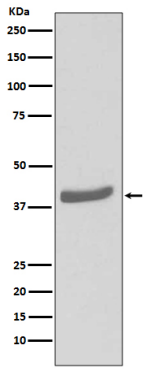
Cellular Location

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.

Images



Western blot analysis of CDK7 expression in MCF-7 cell lysate.