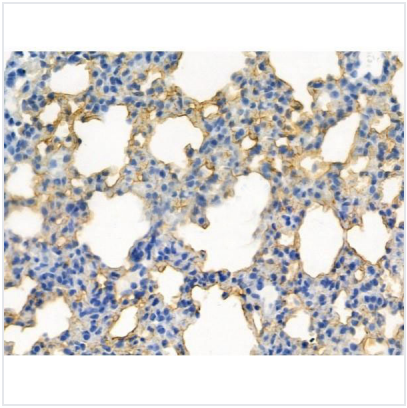
CDK5 Antibody – Rabbit Polyclonal

PRODUCT OVERVIEW

Product Name	CDK5, Polyclonal Antibody
Full Product Name	Phospho-CDK5 (Tyr239) Antibody
Product Gene Name	anti-CDK5 antibody
Product Synonym Gene Name	CDK5
Product Synonym Names	Cdk 5; Cdk5; CDK5_HUMAN; Cell division protein kinase 5; Crk6; Cyclin dependent kinase 5; Cyclin-dependent kinase 5; Protein kinase CDK5 splicing; PSSALRE; Serine threonine protein kinase PSSALRE; Serine/threonine-protein kinase PSSALRE; Tau protein kinase II catalytic subunit; TPKII catalytic subunit
Clonality	Polyclonal
Isotype	Rabbit IgG
Host	Rabbit
Species Reactivity	Human, Mouse, Rat
Form/Format	Liquid. Rabbit IgG in phosphate buffered saline, pH7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Purity/Purification	The antibody is from purified rabbit serum by affinity purification via sequential chromatography on phospho-peptide and non-phospho-peptide affinity columns.
Concentration	1mg/ml (lot specific)
Specificity	Phospho-CDK5 (Tyr239) Antibody detects endogenous levels of CDK5 only when phosphorylated at Tyr239. Tissue Specificity: Isoform 1 is ubiquitously expressed. Accumulates in cortical neurons (at protein level). Isoform 2 has only been detected in testis, skeletal muscle, colon, bone marrow and ovary.
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.
Antibody/Peptide Pairs	CDK5 (Tyr239) peptide (MBS9615977) is used for blocking the activity of CDK5 (Tyr239) antibody (MBS9612696)
Molecular Weight	33,304 Da
Chromosome Location	Chromosome: 7; NC_000007.13 (150750899..150755052, complement). Location: 7q36
OMIM	123831
3D Structure	ModBase 3D Structure for Q00535
Supply Chain Verification	Manufactured in a lab with traceable raw materials manufactured on site. Coordinated product portfolio of antibodies, pairs, conjugates, recombinant proteins, and immunoassay materials available, please inquire.
Immunogen	A synthesized peptide derived from human CDK5 around the phosphorylation site of Tyr239.
Conjugation	Unconjugated
Fragment	Fab fragment
Post Translational Modifications	Phosphorylation on Tyr-15 by ABL1 and FYN, and on Ser-159 by casein kinase 1 promotes kinase activity. By contrast, phosphorylation at Thr-14 inhibits activity.Phosphorylation at Ser-159 is essential for maximal catalytic activity.

Subunit Structure	Heterodimer composed of a catalytic subunit CDK5 and a regulatory subunit CDK5R1 (p25) and macromolecular complex composed of at least CDK5, CDK5R1 (p35) and CDK5RAP1 or CDK5RAP2 or CDK5RAP3. Only the heterodimer shows kinase activity. Under neurotoxic stress and neuronal injury conditions, p35 is cleaved by calpain to generate p25 that hyperactivates CDK5, that becomes functionally disabled and often toxic. Found in a trimolecular complex with CABLES1 and ABL1. Interacts with CABLES1 and CABLES2 (By similarity). Interacts with AATK and GSTP1. Binds to HDAC1 when in complex with p25. Interaction with myristoylation p35 promotes CDK5 association with membranes. Both isoforms 1 and 2 interacts with beta-catenin/CTNNB1. Interacts with delta-catenin/CTNND2 and APEX1. Interacts with P53/TP53 in neurons. Interacts with EPHA4; may mediate the activation of NGEF by EPHA4. Interacts with PTK2/FAK1 (By similarity). The complex p35/CDK5 interacts with CLOCK. Interacts with HTR6 (By similarity).
Similarity	Belongs to the protein kinase superfamily. CMGC Ser/Thr protein kinase family. CDC2/CDKX subfamily.
Subcellular Location	Cytoplasm. Cell membrane>Peripheral membrane protein. Perikaryon. Cell projection>Lamellipodium. Cell projection>Growth cone. Cell junction>Synapse>Postsynaptic density. Note: In axonal growth cone with extension to the peripheral lamellipodia (By similarity). Under neurotoxic stress and neuronal injury conditions, CDK5R (p35) is cleaved by calpain to generate CDK5R1 (p25) in response to increased intracellular calcium. The elevated level of p25, when in complex with CDK5, leads to its subcellular misallocation as well as its hyperactivation. Colocalizes with CTNND2 in the cell body of neuronal cells, and with CTNNB1 in the cell-cell contacts and plasma membrane of undifferentiated and differentiated neuroblastoma cells. Reversibly attached to the plasma membrane in an inactive form when complexed to dephosphorylated p35 or CDK5R2 (p39), p35 phosphorylation releases this attachment and activates CDK5.Nucleus.
ISO Certification	Manufactured in an ISO 9001:2015 Certified Laboratory.
Applications Tested/Suitable for anti-CDK5 antibody	Immunohistochemistry (IHC), Peptide ELISA (EIA)
Application Notes for anti-CDK5 antibody	IHC: 1:50-1:200 Peptide ELISA: 1:20,000-1:40,000

Related Product Information for anti-CDK5 antibody	Proline-directed serine/threonine-protein kinase essential for neuronal cell cycle arrest and differentiation and may be involved in apoptotic cell death in neuronal diseases by triggering abortive cell cycle re-entry. Interacts with D1 and D3-type G1 cyclins. Phosphorylates SRC, NOS3, VIM/vimentin, p35/CDK5R1, MEF2A, SIPA1L1, SH3GLB1, PXN, PAK1, MCAM/MUC18, SEPT5, SYN1, DNM1, AMPH, SYNJ1, CDK16, RAC1, RHOA, CDC42, TONEBP/NFAT5, MAPT/TAU, MAP1B, histone H1, p53/TP53, HDAC1, APEX1, PTK2/FAK1, huntingtin/HTT, ATM, MAP2, NEFH and NEFM. Regulates several neuronal development and physiological processes including neuronal survival, migration and differentiation, axonal and neurite growth, synaptogenesis, oligodendrocyte differentiation, synaptic plasticity and neurotransmission, by phosphorylating key proteins. Activated by interaction with CDK5R1 (p35) and CDK5R2 (p39), especially in post-mitotic neurons, and promotes CDK5R1 (p35) expression in an autostimulation loop. Phosphorylates many downstream substrates such as Rho and Ras family small GTPases (e.g. PAK1, RAC1, RHOA, CDC42) or microtubule-binding proteins (e.g. MAPT/TAU, MAP2, MAP1B), and modulates actin dynamics to regulate neurite growth and/or spine morphogenesis. Phosphorylates also exocytosis associated proteins such as MCAM/MUC18, SEPT5, SYN1, and CDK16/PCTAIRE1 as well as endocytosis associated proteins such as DNM1, AMpHand SYNJ1 at synaptic terminals. In the mature central nervous system (CNS), regulates neurotransmitter movements by phosphorylating substrates associated with neurotransmitter release and synapse plasticity; synaptic vesicle exocytosis, vesicles fusion with the presynaptic membrane, and endocytosis. Promotes cell survival by activating anti-apoptotic proteins BCL2 and STAT3, and negatively regulating of JNK3/MAPK10 activity. Phosphorylation of p53/TP53 in response to genotoxic and oxidative stresses enhances its stabilization by preventing ubiquitin ligase-mediated proteasomal degradation, and induces transactivation of p53/TP53 target genes, thus regulating apoptosis. Phosphorylation of p35/CDK5R1 enhances its stabilization by preventing calpain-mediated proteolysis producing p25/CDK5R1 and avoiding ubiquitin ligase-mediated proteasomal degradation. During aberrant cell-cycle activity and DNA damage, p25/CDK5 activity elicits cell-cycle activity and double-strand DNA breaks that precedes neuronal death by deregulating HDAC1. DNA damage triggered phosphorylation of huntingtin/HTT in nuclei of neurons protects neurons against polyglutamine expansion as well as DNA damage mediated toxicity. Phosphorylation of PXN reduces its interaction with PTK2/FAK1 in matrix-cell focal adhesions (MCFA) during oligodendrocytes (OLs) differentiation. Negative regulator of Wnt/beta-catenin signaling pathway. Activator of the GAIT (IFN-gamma-activated inhibitor of translation) pathway, which suppresses expression of a post-transcriptional regulon of proinflammatory genes in myeloid cells; phosphorylates the linker domain of glutamyl-prolyl tRNA synthetase (EPRS) in a IFN-gamma-dependent manner, the initial event in assembly of the GAIT complex. Phosphorylation of SH3GLB1 is required for autophagy induction in starved neurons. Phosphorylation of TONEBP/NFAT5 in response to osmotic stress mediates its rapid nuclear localization. MEF2 is inactivated by phosphorylation in nucleus in response to neurotoxin, thus leading to neuronal apoptosis. APEX1 AP-endodeoxyribonuclease is repressed by phosphorylation, resulting in accumulation of DNA damage and contributing to neuronal death. NOS3 phosphorylation down regulates NOS3-derived nitrite (NO) levels. SRC phosphorylation mediates its ubiquitin-dependent degradation and thus leads to cytoskeletal reorganization. May regulate endothelial cell migration and angiogenesis via the modulation of lamellipodia formation. Involved in dendritic spine morphogenesis by mediating the EFNA1-EPHA4 signaling. The complex p35/CDK5 participates in the regulation of the circadian clock by modulating the function of CLOCK protein: phosphorylates CLOCK at 'Thr-451' and 'Thr-461' and regulates the transcriptional activity of the CLOCK-ARNTL/BMAL1 heterodimer in association with altered stability and subcellular distribution.
Other Notes	Small volumes of anti-CDK5 antibody vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for CDK5 purchase	MBS9612696 is an antibody targeting CDK5. Also known as Phospho-CDK5 (Tyr239) Antibody. Reactive in Human, Mouse, Rat. Host: Rabbit.



Immunohistochemistry (IHC) of anti-CDK5 antibody
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 primary antibody at 4 degree C overnight. An HRP conjugated anti-Rabbit antibody was used as the secondary antibody.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for CDK5. It may not necessarily be applicable to this product.

NCBI GI #	256542306
NCBI GeneID	1020
NCBI Accession #	NP_001157882.1
UniProt Primary Accession #	Q00535
UniProt Secondary Accession #	A1XKG3
UniProt Related Accession #	Q00535
GenBank Nucleotide #	NM_001164410.1
NCBI Official Full Name	cyclin-dependent kinase 5 isoform 2
NCBI Official Synonym Full Names	cyclin-dependent kinase 5
NCBI Official Symbol	CDK5
NCBI Official Synonym Symbols	PSSALRE
UniProt Protein Name	Cyclin-dependent kinase 5
UniProt Synonym Protein Names	Cell division protein kinase 5; Serine/threonine-protein kinase PSSALRE; Tau protein kinase II catalytic subunit
Protein Family	Cyclin-dependent kinase
UniProt Gene Name	CDK5
UniProt Synonym Gene Names	CDKN5; TPKII catalytic subunit
UniProt Entry Name	CDK5_HUMAN
NCBI Protein Information	cyclin-dependent kinase 5; TPKII catalytic subunit; protein kinase CDK5 splicing; cell division protein kinase 5; serine/threonine-protein kinase PSSALRE; tau protein kinase II catalytic subunit

NCBI Summary for CDK5	This gene encodes a proline-directed serine/threonine kinase that is a member of the cyclin-dependent kinase family of proteins. Unlike other members of the family, the protein encoded by this gene does not directly control cell cycle regulation. Instead the protein, which is predominantly expressed at high levels in mammalian postmitotic central nervous system neurons, functions in diverse processes such as synaptic plasticity and neuronal migration through phosphorylation of proteins required for cytoskeletal organization, endocytosis and exocytosis, and apoptosis. In humans, an allelic variant of the gene that results in undetectable levels of the protein has been associated with lethal autosomal recessive lissencephaly-7. Alternative splicing results in multiple transcript variants. [provided by RefSeq, May 2015]
UniProt Comments for CDK5	CDK5: a protein kinase of the CDK family. Unlike other members of this family, it is not activated by cyclins but by p35 (CDK5R1) and p39. An important regulator of neuronal positioning during brain development. May also play a role in synaptogenesis and neurotransmission. Substrates include TAU, MAP2, NF-H and -M, Nudel, PDE6, beta-catenin, amphyphysin, dynamin I, synapsin 1, Munc-18, and NMDA receptor 2A. Plays a role in myogenesis, haematopoietic cell differentiation, spermatogenesis, insulin secretion, and lens differentiation. Implicated in the pathology of neurofibrillary tangles and formation of senile plaques, hallmarks of Alzheimer?s disease. Induces tau phosphorylation and aggregation and neurofibrillary tangle deposition and neurodegeneration in in vitro and in vivo animal models. Brain samples from Alzeimer?s pateints show elevated CDK5 activity. Protein type: Kinase, protein; EC 2.7.11.1; Cell cycle regulation; Protein kinase, Ser/Thr (non-receptor); Protein kinase, CMGC; CMGC group; CDK family; CDK5 subfamily; CDK/CDK5 subfamily Chromosomal Location of Human Ortholog: 7q36 Cellular Component: cyclin-dependent protein kinase 5 activator complex; dendrite; postsynaptic density; perikaryon; cytosol; postsynaptic membrane; cytoskeleton; growth cone; membrane; cell soma; axon; lamellipodium; cytoplasm; nucleus; cell junction; neuromuscular junction; filopodium Molecular Function: acetylcholine receptor activator activity; ephrin receptor binding; p53 binding; protein kinase activity; protein serine/threonine kinase activity; ErbB-2 class receptor binding; protein binding; ErbB-3 class receptor binding; cyclin-dependent protein kinase activity; cytoskeletal protein binding; tau-protein kinase activity; kinase activity; ATP binding Biological Process: Schwann cell development; negative regulation of synaptic plasticity; axon extension; cerebellar cortex formation; rhythmic process; regulation of synaptic plasticity; motor axon guidance; sensory perception of pain; receptor clustering; regulation of cell migration; corpus callosum development; regulation of apoptosis; neuron differentiation; receptor catabolic process; oligodendrocyte differentiation; neurite development; central nervous system neuron development; synaptic transmission, glutamatergic; skeletal muscle development; dendrite morphogenesis; cell division; synaptic vesicle endocytosis; negative regulation of protein ubiquitination; negative regulation of transcription, DNA-dependent; axon guidance; regulated secretory pathway; synaptic transmission, dopaminergic; negative regulation of protein export from nucleus; positive regulation of protein binding; protein amino acid autophosphorylation; cell-matrix adhesion; neuron migration; nucleocytoplasmic transport; negative regulation of axon extension; negative regulation of cell cycle; synaptic transmission; intracellular protein transport; synaptogenesis; behavioral response to cocaine; positive regulation of neuron apoptosis; visual learning; cortical actin cytoskeleton organization and biogenesis; layer formation in the cerebral cortex; serine phosphorylation of STAT3 protein; negative regulation of proteolysis; hippocampus development; peptidyl-threonine phosphorylation; cell cycle; cell proliferation; positive regulation of calcium ion-dependent exocytosis; embryonic development; synaptic vesicle exocytosis; peptidyl-serine phosphorylation; neuron apoptosis; positive regulation of protein kinase activity; blood coagulation; regulation of excitatory postsynaptic membrane potential; phosphorylation Disease: Lissencephaly 7 With Cerebellar Hypoplasia
Research Articles on CDK5	**1.** The role of Cdk5 deregulation in cell-cycle-driven Alzheimer disease neuronal death.
Precautions	All of MyBioSource's Products are for scientific laboratory research purposes and are not for diagnostic, therapeutics, prophylactic or in vivo use. Through your purchase, you expressly represent and warrant to MyBioSource that you will properly test and use any Products purchased from MyBioSource in accordance with industry standards. MyBioSource and its authorized distributors reserve the right to refuse to process any order where we reasonably believe that the intended use will fall outside of our acceptable guidelines.

Disclaimer	While every efforts were made to ensure the accuracy of the information provided in this datasheet, MyBioSource will not be liable for any omissions or errors contained herein. MyBioSource reserves the right to make changes to this datasheet at any time without prior notice. It is the responsibility of the customer to report product performance issues to MyBioSource within 30 days of receipt of the product. Please visit our Terms & Conditions page for more information.
Product Note	Select online data sheet information is drawn from bioinformatics databases, occasionally resulting in ambiguous or non-relevant product information. It is the responsibility of the customer to review, verify, and evaluate the information to make sure it matches their requirements before purchasing the kit. Our ELISA Kit assays are dynamic research tools and sometimes they may be updated and improved. If the format of this assay is important to you then please request the current manual or contact our technical support team with a presales inquiry before placing an order. We will confirm the current details of the assay. We cannot guarantee the sample manual posted online is the most current manual, it is intended to serve as an example only. Please refer to the instructions For Use provided with the assay kit for precise details.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

MyBioSource | Tel: +1.858.633.0165 | Fax: +1.858.633.0166 | mybiosource.com/contact-us
Online datasheet: https://www.mybiosource.com/polyclonal-human-mouse-rat-antibody/cdk5/9612696