

## Product datasheet for **MR204021**

### Cdk5 (NM\_007668) Mouse Tagged ORF Clone

#### Product data:

|                           |   |
|---------------------------|---|
| Product Type:             | Expression Plasmids   |
| Product Name:             | Cdk5 (NM_007668) Mouse Tagged ORF Clone                                     |
| Tag:                      | Myc-DDK   |
| Symbol:                   | Cdk5  |
| Synonyms:                 | AW048668; Crk6  |
| Mammalian Cell Selection: | Neomycin  |
| Vector:                   | pCMV6-Entry (PS100001)  |
| E. coli Selection:        | Kanamycin (25 ug/mL)  |
| ORF Nucleotide Sequence:  | >MR204021 representing NM_007668<br>Red=Cloning site Blue=ORF Green=Tags(s) |

TTTTGTAATACGACTCACTATAGGGCGGCCGGAATTCGTCGACTGGATCCGGTACCGAGGAGATCTGCC  
GCC**CGGATCGCC**

ATGCAGAAATACGAGAACTGGAGAAGATTGGGAAGGCACCTATGGAAGTGTGTTCAAGGCTAAAAACC  
GGGAAACTCATGAGATTGTGGCTCTGAAGCGTGTGAGGCTGGATGATGACGATGAGGGTGTGCCAAGTTC  
AGCCCTCCGGGAGATCTGTCTACTCAAAGAACTGAAGCACAAAAACATTGTCAGGCTTCATGATGCCTG  
CATAGTGACAAGAAGCTGACACTGGTTTTTGTGTTCTGTGATCAGGACCTGAAGAAATATTTGACAGCT  
GCAATGGTGACCTGGACCCTGAGATTGTGAAGTATTCTCTCCAGCTGCTGAAAGGCCTGGGATTCTG  
TCACAGCCGCAACGTGCTACATAGGGACCTGAAGCCCCAGAACCTGCTCATAAACAGGAATGGGGAGTTG  
AAATTGGCTGATTTTGGCCTGGCCCGAGCCTTTGGTATCCCCGTCCGCTGCTACTCTGCTGAGGTGGTCA  
CGCTGTGGTACCGCCACCGGATGTCTCTTTGGGGCCAAGCTGTACTCCACGTCCATCGACATGTGGTC  
AGCCGGCTGCATCTTTCAGAGCTGGCTAATGCAGGACGACCTCTCTCCCTGGCAATGATGTGGATGAC  
CAGCTGAAGAGGATCTCCGACTGCTAGGGACACCGACTGAGGAACAATGGCCTGCCATGACCAAGCTGC  
CAGACTATAAGCCCTACCAATGTACCCAGCTACAACATCCTTGGTGAACGTCGTGCCAAGCTCAATGC  
CACGGGGAGGGACCTGTTGCAGAACCTATTGAAGTGTAACCCTGTGCAGCGCATCTCAGCAGAGGAGGCC  
TTGCAGCACCCCTACTTCTGACTTCTGTCCCCCA

**ACGCGT**ACGCGGCCGCTCGAGCAGAAACTCATCTCAGAAGAGGATCTGGCAGCAAATGATATCCTGGATT  
ACAAGGATGACGACGATAAGGTTTAA



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**Protein Sequence:** >MR204021 representing NM\_007668  
Red=Cloning site Green=Tags(s)

MQKYEKLEKIGEGTYGTVFKAKNRETHEIVALKRVRLLLLDDDEGVPSSALREICLLKELKHKKNIVRLHDVL  
HSDKKLTLVFEFCQDLKKYFDSCNGDLDPKIVKSFLLQLLKGLGFCHSRNVLHRDLKPQNLLINRNGEL  
KLADFLARAFGIPVRCYSAEVVTLWYRPPDVLFGAKLYSTSIDMWSAGCIFAELANAGRPLFPGNVDVDD  
QLKRIFRLLGTPTEEQWPAMTKLPDYKPYMPYPATTSLVNVVVKLNATGRDLLQNLKKNPVQRISAEAA  
LQHPYFSDFCPP

TRTRPLEQKLISEEDLAANDILDYKDDDDKV

**Restriction Sites:** SgfI-MluI

**Cloning Scheme:**

Cloning sites used for ORF Shuttling:



\* The last codon before the Stop codon of the ORF

**ACCN:** NM\_007668

**ORF Size:** 876 bp

**OTI Disclaimer:** The molecular sequence of this clone aligns with the gene accession number as a point of reference only. However, individual transcript sequences of the same gene can differ through naturally occurring variations (e.g. polymorphisms), each with its own valid existence. This clone is substantially in agreement with the reference, but a complete review of all prevailing variants is recommended prior to use. [More info](#)

**OTI Annotation:** This clone was engineered to express the complete ORF with an expression tag. Expression varies depending on the nature of the gene.

**Components:** The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).

**Reconstitution Method:**

1. Centrifuge at 5,000xg for 5min.
2. Carefully open the tube and add 100ul of sterile water to dissolve the DNA.
3. Close the tube and incubate for 10 minutes at room temperature.
4. Briefly vortex the tube and then do a quick spin (less than 5000xg) to concentrate the liquid at the bottom.
5. Store the suspended plasmid at -20°C. The DNA is stable for at least one year from date of shipping when stored at -20°C.

**RefSeq:** [NM\\_007668.4](#)

**RefSeq Size:** 2059 bp

**RefSeq ORF:** 879 bp

**Locus ID:** 12568

**UniProt ID:** [P49615](#)

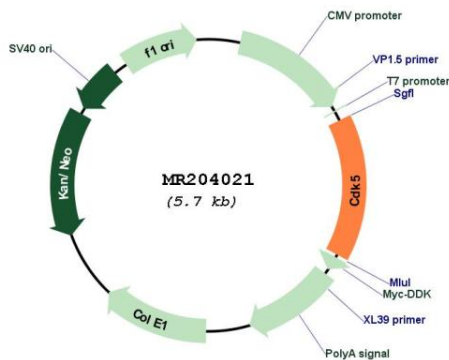
**Cytogenetics:** 5 11.73 cM

**MW:** 33.7 kDa

**Gene Summary:** 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, AMPH and 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 modul

**Product images:**



Circular map for MR204021