Revision 7

Store at -20C

#14145

CDK5 (D1F7M) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, W-S, IP, IF-F, IF-IC	H M R Mk	Endogenous	30	Rabbit IgG	#Q00535	1020

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Simple Western™	1:10 - 1:50
Immunoprecipitation	1:50
Immunofluorescence (Frozen)	1:50
Immunofluorescence (Immunocytochemistry)	1:200 - 1:400

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. *Do not aliquot the antibody.*

Specificity/Sensitivity

CDK5 (D1F7M) Rabbit mAb recognizes endogenous levels of total CDK5 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Pro253 of human CDK5 protein.

Background

Cyclin-dependent kinases (CDKs) are serine/threonine kinases that are activated by cyclins and govern eukaryotic cell cycle progression. While CDK5 shares high sequence homology with its family members, it is thought mainly to function in postmitotic neurons to regulate the cytoarchitecture of these cells. Analogous to cyclins, the regulatory subunits p35 and p39 associate with and activate CDK5 despite the lack of sequence homology. CDK5 is ubiquitously expressed, with high levels of kinase activity detected primarily in the nervous system due to the narrow expression pattern of p35 and p39 in post-mitotic neurons. A large number of CDK5 substrates have been identified although no substrates have been specifically attributed to p35 or p39. Substrates of CDK5 include p35, PAK1, Src, β-catenin, tau, neurofilament-H, neurofilament-M, synapsin-1, APP, DARPP32, PP1-inhibitor, and Rb. p35 is rapidly degraded ($T_{1/2}$ <20 min) by the ubiquitin-proteasome pathway (1). However, p35 stability increases as CDK5 kinase activity decreases, likely as a result of decreased phosphorylation of p35 at Thr138 by CDK5 (2). Proteolytic cleavage of p35 by calpain produces p25 upon neurotoxic insult, resulting in prolonged activation of CDK5 by p25. Research studies have shown accumulation of p25 in neurodegenerative diseases, such as Alzheimer's disease and amyotrophic lateral sclerosis (ALS) (3,4).

Background References

1. Dhavan, R. and Tsai, L.H. (2001) *Nat Rev Mol Cell Biol* 2, 749-59.
2. Patrick, G.N. et al. (1998) *J Biol Chem* 273, 24057-64.
3. Lee, M.S. et al. (2000) *Nature* 405, 360-4.
4. Kusakawa, G. et al. (2000) *J Biol Chem* 275, 17166-72.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **W-S:** Simple Western™ **IP:** Immunoprecipitation **IF-F:** Immunofluorescence (Frozen) **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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