10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

DYRK2 Rabbit pAb

Catalog # AP99688

Product Information

Application	IHC-P, IHC-F, IF
Primary Accession	Q92630
Other Accession	Q92630
Reactivity	Rat, Mouse
Predicted	Pig, Human, Rabbit, Dog, Horse
Host	Rabbit
Clonality	Polyclonal
Calculated MW	66652
Physical State	Liquid
Immunogen	KLH conjugated synthetic peptide derived from human DYRK2
Epitope Specificity	425-480/601
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. MNB/DYRK subfamily. Contains 1 protein kinase domain.
SUBUNIT	Component of an E3 ligase complex containing DYRK2, EDD/UBR5, DDB1 and VPRBP (EDVP complex). Interacts directly with EDD/UBR5, DDB1 and VPRBP. Interacts with SIAH2 and MDM2. Interacts with MAP3K10 and NFATC1. May also interact with CCNL2.
Post-translational modifications	Autophosphorylates cotranslationally on the second tyrosine residue in the Tyr-X-Tyr motif in the activation loop, but once mature, does not have any protein tyrosine kinase activity. Phosphorylated at Thr-106 and Ser-442 by ATM in response to genotoxic stress. Under normal conditions, polyubiquitinated in the nucleus by MDM2, leading to its proteasomal degradation. Phosphorylation on Thr-106 and Ser-442 by ATM in response to genotoxic stress disrupts MDM2 binding and prevents MDM2-mediated ubiquitination and subsequent proteasomal degradation. Polyubiquitinated by SIAH2, leading to its proteasomal degradation. Polyubiquitinated by SIAH2 occurs under normal conditions, and is enhanced in response to hypoxia.
Important Note	This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.
Background Descriptions	Dyrk is the homolog of the Drosophila mnb (minibrain) gene, which is required for neurogenesis (1–3). Dyrk is a dual-specificity tyrosine kinase and serine/threonine kinase, which is itself regulated by tyrosine phosphorylation (1). Several mammalian Dyrk related proteins have been identified and are thought to compose a family of dual specificity protein kinases (4). Dyrk family members, including Dyrk1A (originally Dyrk), Dyrk1B, Dryk1C, Dyrk2, Dyrk3, Dyrk4A and Dyrk4B, are thought to be involved in diverse cellular functions (4). Dyrk1A is a candidate gene that may be involved in Downs syndrome, and it has been found to be somewhat overexpressed in Downs syndrome (1,5). Two isoforms of human fetal brain Dyrk2 exist: a deduced 528-amino acid protein and a protein containing 73 additional amino acids at the amino terminus (4). Dyrk3 is strongly expressed in testis, only after the onset of spermatogenesis, and very weakly expressed in spleen and adrenal gland (1).

The genes which encode Dyrk2 and Dyrk3 map to human chromosomes 12 and 1q32, respectively (4).

Additional Information

Gene ID 8445

Other Names DYRK2_HUMAN; DYRK2; 2.7.12.1; DYRK2_MOUSE; dual specificity tyrosine phosphorylation regulated kinase 2; dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 2; dual specificity tyrosine-(Y)-phosphorylation regulated kinase 2

Dilution IHC-P=1:100-500,IHC-F=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 DYRK2 {ECO:0000303|PubMed:9748265, ECO:0000312|HGNC:HGNC:3093}

Function Serine/threonine-protein kinase involved in the regulation of the mitotic cell cycle, cell proliferation, apoptosis, organization of the cytoskeleton and neurite outgrowth (PubMed:11311121, PubMed:12588975, PubMed:16511445, PubMed:16611631, PubMed:17349958, PubMed:18599021, PubMed:22307329, PubMed:9748265). Phosphorylates CRMP2/DPYSL2, CRMP4/DPYSL3, DCX, EIF2B5, EIF4EBP1, GLI2, GLI3, GYS1, JUN, MDM2, MYC, NFATC1, p53/TP53, TAU/MAPT and KATNA1 (PubMed:11311121, PubMed:12588975, PubMed:16511445, PubMed:16611631, PubMed:17349958, PubMed:18599021, PubMed:22307329, PubMed:38968120). Can phosphorylate histone H1, histone H3 and histone H2B (in vitro) (PubMed:9748265). Can phosphorylate CARHSP1 (in vitro) (PubMed:15910284). Functions in part via its role in ubiquitin-dependent proteasomal protein degradation (PubMed:9748265). Functions downstream of ATM and phosphorylates p53/TP53 at 'Ser-46', and thereby contributes to the induction of apoptosis in response to DNA damage (PubMed:17349958, PubMed:18599021). Phosphorylates NFATC1, and thereby inhibits its accumulation in the nucleus and its transcription factor activity (PubMed:16511445). May play a general role in the priming of GSK3 substrates (PubMed:11311121, PubMed:16611631). Phosphorylates EIF2B5 at 'Ser-544', enabling its subsequent phosphorylation and inhibition by GSK3B (PubMed:11311121). Likewise, phosphorylation of NFATC1, CRMP2/DPYSL2 and CRMP4/DPYSL3 promotes their subsequent phosphorylation by GSK3B (PubMed:16611631). Inactivates GYS1 by phosphorylation at 'Ser-641', and potentially also a second phosphorylation site, thus regulating glycogen synthesis (PubMed:14593110). Mediates EDVP E3 ligase complex formation and is required for the phosphorylation and subsequent degradation of KATNA1 (PubMed:19287380). Phosphorylates TERT at 'Ser-457', promoting TERT ubiquitination by the EDVP complex (PubMed:23362280). Phosphorylates SIAH2, and thereby increases its ubiquitin ligase activity (PubMed:22878263). Promotes the proteasomal degradation of MYC and JUN, and thereby regulates progress through the mitotic cell cycle and cell proliferation (PubMed:22307329). Acts as a positive regulator of smoothened signaling by mediating phosphorylation of GLI2 and GLI3 in response to smoothened activation, promoting their dissociation from SUFU inhibitor and

	translocation to the nucleus (PubMed:38968120). Can also acts as a negative regulator of smoothened by catalyzing phosphorylation of GLI2 and GLI3 and promote their proteasomal degradation (PubMed:18455992). Plays a role in cytoskeleton organization and neurite outgrowth via its phosphorylation of DCX and DPYSL2 (By similarity).
Cellular Location	Cytoplasm. Nucleus. Note=Translocates into the nucleus following DNA damage.
Tissue Location	Testis, after the onset of spermatogenesis.

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