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DYRK2 Antibody

Catalog # ASC11308

Product Information

Application	WB, IF, ICC, E
Primary Accession	Q92630
Other Accession	NP_006473, 4503427
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	66652
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	DYRK2 antibody can be used for detection of DYRK2 by Western blot at 1 - 2 g/mL. Antibody can also be used for immunocytochemistry starting at 10 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	8445
Other Names	Dual specificity tyrosine-phosphorylation-regulated kinase 2, 2.7.12.1, DYRK2
Target/Specificity	DYRK2; Two isoforms of DYRK2 are known to exist; this antibody will recognize both isoforms. DYRK2 antibody will not cross-react with other DYRK family members.
Reconstitution & Storage	DYRK2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	DYRK2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

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.

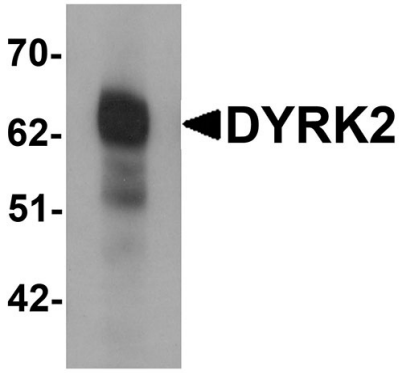
Background

DYRK2 Antibody: DYRK2 is a member of the dual-specificity tyrosine phosphorylation-regulated kinase (DYRK) family that is thought to be involved in cellular proliferation and apoptosis. Under normal conditions, nuclear but not cytoplasmic DYRK2 is ubiquitinated by MDM2, leading to its constitutive degradation. However, upon exposure to genotoxic stress, ATM phosphorylates DYRK2, leading to its dissociation from MDM2 and its phosphorylation of p53, thereby inducing apoptosis. Recent evidence also suggests that DYRK2 may serve as a scaffold that facilitates assembly of an E3 ubiquitin ligase.

References

Becker W, Weber Y, Wetzel K, et al. Sequence characteristics, subcellular localization, and substrate specificity of DRYK-related kinases, a novel family of dual specificity protein kinases. J. Biol. Chem. 1998; 273:25893-902.
Yoshida K. Role for DYRK family kinases on regulation of apoptosis. Biochem. Pharmacol. 2008; 76:1389-94.
Taira N, Yamamoto H, Yamaguchi T, et al. ATM augments nuclear stabilization of DYRK2 by inhibiting MDM2 in the apoptotic response to DNA damage J. Biol. Chem. 2010; 285:4909-19.

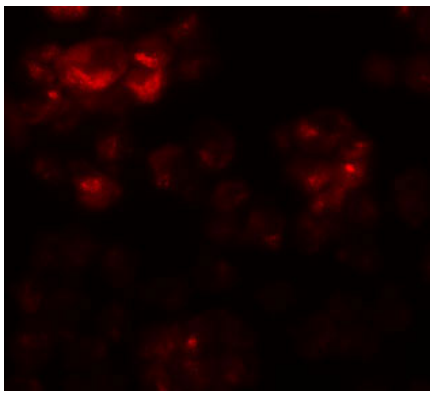
Images



Western blot analysis of DYRK2 in 293 cell lysate with DYRK2 antibody at (A) 1 and (B) 2 µg/mL.



Immunocytochemistry of DYRK2 in 293 cells with DYRK2 antibody at 10 µg/mL.



Immunofluorescence of DYRK2 in 293 cells with DYRK2 antibody at 20 µg/mL.

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