Revision 6

Store at -20C

#60433

Pax6 (D3A9V) XP® Rabbit mAb

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IHC-P, IF-IC	H	Endogenous	50	Rabbit IgG	#P26367	5080

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:200
Immunohistochemistry (Paraffin)	1:250 - 1:1000
Immunofluorescence (Immunocytochemistry)	1:100 - 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.

For a carrier free (BSA and azide free) version of this product see product #58677.

Specificity/Sensitivity

Pax6 (D3A9V) XP® Rabbit mAb recognizes endogenous levels of total Pax6 protein.

Species predicted to react based on 100% sequence homology

Mouse, Rat

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human Pax6 protein.

Background

Paired box (PAX) proteins are a family of transcription factors that play important and diverse roles in animal development (1). Nine PAX proteins (PAX1-9) have been described in humans and other mammals. They are defined by the presence of an amino-terminal "paired" domain, consisting of two helix-turn-helix motifs, with DNA binding activity (2). PAX proteins are classified into four structurally distinct subgroups (I-IV) based on the absence or presence of a carboxy-terminal homeodomain and a central octapeptide region. Subgroup I (PAX1 and 9) contains the octapeptide but lacks the homeodomain; subgroup II (PAX2, 5, and 8) contains the octapeptide and a truncated homeodomain; subgroup III (PAX3 and 7) contains the octapeptide and a complete homeodomain; and subgroup IV (PAX4 and 6) contains a complete homeodomain but lacks the octapeptide region (2). PAX proteins play critically important roles in development by regulating transcriptional networks responsible for embryonic patterning and organogenesis (3); a subset of PAX proteins also maintain functional importance during postnatal development (4). Research studies have implicated genetic mutations that result in aberrant expression of PAX genes in a number of cancer subtypes (1-3), with members of subgroups II and III identified as potential mediators of tumor progression (2).
Pax6 has important functions in organ development. It is a key regulator of eye development (5), and mutations in Pax6 have been associated with some forms of aniridia, a congenital malformation of the eye (6). Pax6 is also involved in neuronal development, which plays an especially important role in corticogenesis (7). Within its role in the adult brain, it has recently been associated with aging, with gene occupancy studies showing increased association of Pax6 with genes associated with many aging processes in mice (8,9). Pax6 also plays another important function in development and maintenance of pancreatic β-cells (10). Driven by expression of Pdx1, both Pax6 and NGN3 expression is required for β-cell identity (11).

Background References

1. Lang, D. et al. (2007) *Biochem Pharmacol* 73, 1-14.
2. Robson, E.J. et al. (2006) *Nat Rev Cancer* 6, 52-62.
3. Wang, Q. et al. (2008) *J Cell Mol Med* 12, 2281-94.
4. Blake, J.A. et al. (2008) *Dev Dyn* 237, 2791-803.
5. Shaham, O. et al. (2012) *Prog Retin Eye Res* 31, 351-76.
6. Hingorani, M. et al. (2012) *Eur J Hum Genet* 20, 1011-7.
7. Manuel, M.N. et al. (2015) *Front Cell Neurosci* 9, 70.
8. Maurya, S.K. and Mishra, R. (2017) *Ann Neurosci* 24, 20-25.
9. Maurya, S.K. and Mishra, R. (2017) *J Chem Neuroanat* 82, 60-64.
10. Swisa, A. et al. (2017) *Front Genet* 8, 21.
11. Mitchell, R.K. et al. (2017) *J Biol Chem* 292, 8892-8906.

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 **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin) **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human

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