

PAX9 Antibody

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP	H	Endogenous	38	Rabbit	#P55771	5083

Product Usage Information**Application**

Western Blotting
Immunoprecipitation

Dilution

1:1000
1:50

Storage

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

Specificity/Sensitivity

PAX9 Antibody recognizes endogenous levels of total PAX9 protein.

Species predicted to react based on 100% sequence homology

Mouse, Monkey

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human PAX9 protein. Antibodies are purified by protein A and peptide affinity chromatography.

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).

PAX9 is expressed in pharyngeal arch mesenchyme (5,6), and is essential for embryonic development of the teeth and other pharyngeal arch derivatives (5,7). In mice, deletion of PAX9 results in an absence of structures derived from the pharyngeal pouches (e.g. thymus, parathyroid glands) (5), while in humans, PAX9 mutations are frequently associated with congenital tooth agenesis syndromes such as oligodontia and hypodontia (8,9). PAX9 appears to interact with other transcription factors (e.g. MSX1) to regulate the expression of BMP-family proteins (e.g. BMP4) that orchestrate pharyngeal arch development (10,11). Increased expression of PAX9, resulting from amplification at the PAX9 locus, has also been linked to an increased incidence of lung cancer (12).

Background References

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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. Peters, H. et al. (1998) *Genes Dev* 12, 2735-47.
6. Peters, H. et al. (1998) *Eur J Oral Sci* 106 Suppl 1, 38-43.
7. Hetzer-Egger, C. et al. (2002) *Eur J Immunol* 32, 1175-81.
8. Bergendal, B. et al. (2011) *Am J Med Genet A* 155, 1616-22.
9. Suda, N. et al. (2011) *J Dent Res* 90, 382-6.
10. Nakatomi, M. et al. (2010) *Dev Biol* 340, 438-49.
11. Wang, Y. et al. (2011) *J Dent Res* 90, 311-6.
12. Kendall, J. et al. (2007) *Proc Natl Acad Sci USA* 104, 16663-8.

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
Cross-Reactivity Key	H: Human
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