



Qty: 100 µg/400 µL

Rabbit anti-T-box 5

Catalog No. 42-6500

Lot No.

Rabbit anti-T-box 5

FORM

This polyclonal antibody is supplied as a 400 µL aliquot at a concentration of 0.25 mg/mL in phosphate buffered saline (pH 7.4) containing 0.1% sodium azide. This antibody is epitope-affinity purified from rabbit antiserum.

PAD: ZMD.586

IMMUNOGEN

Synthetic peptide derived from an internal region of the human, predicted dog, and predicted chimpanzee Tbx5 proteins, which differ from mouse and rat by one conservative amino acid change

SPECIFICITY

This antibody is specific for the T-box 5 (Tbx5) protein. On Western blots, it identifies the target band at ~58 kDa.

REACTIVITY

Reactivity has been confirmed with human 293T cells transfected with Tbx5 ORF IOH11603 and mouse fetal heart homogenates. Based on amino acid sequence homology, reactivity with rat, dog, and chimpanzee may be observed.

Sample	Western Blotting	Immuno-precipitation
Human	+++	ND
Mouse	+++	+++
Rat	ND	ND
Dog	ND	ND
Chimpanzee	ND	ND

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable N/A, Not Determined ND)

USAGE

Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following concentration ranges are recommended starting points for this product.

Western Blotting: 2-3 µg/mL

Immunoprecipitation: 5 µg/IP reaction

STORAGE

Store at 2-8°C for up to one month. Store at -20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

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BACKGROUND

T-box 5 (Tbx5) is a member of a phylogenetically conserved family of proteins that share a common DNA-binding domain, the T-box. T-box proteins are transcription factors involved in the regulation of developmental processes. Tbx5 is closely linked to related family member Tbx3 (the cause for ulnar mammary syndrome), and several transcript variants encoding different isoforms have been described for this gene. The encoded protein plays a role in heart development and specification of limb identity. An additional early function of Tbx5 is observed in zebrafish that precedes the formation of the limb bud itself.¹ It was recently discovered that Tbx5 and another transcription factor, Sall4, interact both positively and negatively to finely regulate patterning and morphogenesis of forelimb and heart.²

Mutations in the *Tbx5* gene have been associated with Holt-Oram syndrome, a developmental disorder affecting the heart and upper limbs that is characterized by thumb anomaly and atrial septal defects.³ A murine model of Tbx5 deficiency clearly demonstrates its role in Holt-Oram syndrome.⁴ Congenital heart defects are the most common developmental anomaly and the leading non-infectious cause of mortality in newborns. Nkx2.5 mutations have been shown to be the causative agent behind these defects. Importantly, Tbx5 physically interacts with Nkx2.5 and synergistically promote cardiomyocyte differentiation.⁵ Gata4 mutations are also partially causative of congenital heart disease and these mutations also abrogate the physical interaction between Gata4 and Tbx5.⁶ These results demonstrate that Tbx5 by itself and also in conjunction with two other important transcription factors, Gata4 and Nkx2.5, plays a crucial role in heart development and formation of heart defects.

REFERENCES

1. Ahn DG, et al. *Nature* 417(6890):754-758, 2002.
2. Koshiba-Takeuchi K, et al. *Nat Genet* 38(2):175-183, 2006.
3. Basson CT, et al. *Nat Genet* 15(1):30-35, 1997.
4. Bruneau BG, et al. *Cell* 106(6):709-721, 2001.
5. Hiroi Y, et al. *Nat Genet* 28(3):276-280, 2001.
6. Garg V, et al. *Nature* 424(6947):443-447, 2003.

RELATED PRODUCTS

Product	Conjugate	Cat. No.
Protein A	Sepharose® 4B	10-1041
rec-Protein G	Sepharose® 4B	10-1241

Conjugate	ZyMAX™ Goat x Rabbit IgG (H+L)	ZyMAX™ Goat x Mouse IgG (H+L)
Purified	81-6100	81-6500
FITC	81-6111	81-6511
TRITC	81-6114	81-6514
Cy™3	81-6115	81-6515
Cy™5	81-6116	81-6516
HRP	81-6120	81-6520
AP	81-6122	81-6522
Biotin	81-6140	81-6540

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