

Product Information



Tryptophan Hydroxylase (Phospho-Ser⁵⁸) Polyclonal Antibody

Item No. 10009397

Synonym:	TPH
Supplied as:	100 µl of affinity-purified antibody in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg per ml BSA and 50% glycerol
Host:	Rabbit
Antigen:	Phosphopeptide corresponding to amino acid residues surrounding phospho-Ser ⁵⁸ of TPH
Cross Reactivity:	(+) Rabbit TPH; expected to react with bovine, canine, human, mouse, non-human primate, rat, <i>Xenopus</i> , and zebrafish TPH
Stability:	≥1 year at -20°C
Application:	The recommended starting dilution for western blot is 1:1,000.

Tryptophan hydroxylase (TPH) catalyzes the 5-hydroxylation of tryptophan, which is the first step in the biosynthesis of indoleamines (serotonin and melatonin).¹ In mammals, serotonin biosynthesis occurs predominantly in neurons which originate in the Raphe nuclei of the brain, and melatonin synthesis takes place within the pineal gland. Although TPH catalyzes the same reaction within the Raphe nuclei and the pineal gland, TPH activity is rate-limiting for serotonin but not melatonin biosynthesis. Serotonin functions mainly as a neurotransmitter, whereas melatonin is the principal hormone secreted by the pineal gland. The activity of TPH is enhanced by phosphorylation by cAMP-dependent protein kinase (PKA) and Ca²⁺/calmodulin kinase II (CaM K II).^{2,3} Both PKA and CaM K II phosphorylate Ser⁵⁸ which lies within the regulatory domain of TPH.⁴

References

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- Jiang, G.C., Yohrling, G.J., Schmitt, J.D., *et al.* Identification of substrate orienting and phosphorylation sites within tryptophan hydroxylase using homology-based molecular modeling. *J. Mol. Biol.* **302**, 1005-1017 (2000).
- Johansen, P.A., Jennings, I., Cotton, R.G., *et al.* Phosphorylation and activation of tryptophan hydroxylase by exogenous protein kinase A. *J. Neurochem.* **66**, 817-823 (1996).
- Kuhn, D.M., Arthur, R., Jr., and States, J.C. Phosphorylation and activation of brain tryptophan hydroxylase: Identification of serine-58 as a substrate site for protein kinase A. *J. Neurochem.* **68**, 2220-2223 (1997).

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