

# Anti-Phospho-Ser<sup>58</sup> Tryptophan Hydroxylase 1 Antibody



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**Catalog #:** p1575-58

**Size:** 100 µl

**Cite this Antibody:** PhosphoSolutions Cat# p1575-58, RRID:AB\_2492273

Host	Applications	Species Tested	Species Reactivity*	Molecular Weight
Rabbit	WB 1:1000	Rab, M	B, Ch, H, M, NHP, R, X, Z	~55 kDa

**Product Description:** Affinity purified rabbit polyclonal antibody.

**Biological Significance:** Tryptophan hydroxylase (TPH) catalyzes the 5-hydroxylation of tryptophan, which is the first step in the biosynthesis of indoleamines (serotonin and melatonin) (Martinez et al., 2001). 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 Ca<sup>2+</sup>/calmodulin kinase II (CaM K II) (Jiang et al., 2000; Johansen et al., 1996). Both PKA and CaM K II phosphorylate Ser<sup>58</sup> which lies within the regulatory domain of TPH (Kuhn et al., 1997).

**Antigen:** Phosphopeptide corresponding to amino acid residues surrounding the phospho-Ser<sup>58</sup> of rat tryptophan hydroxylase 2 (TPH2).

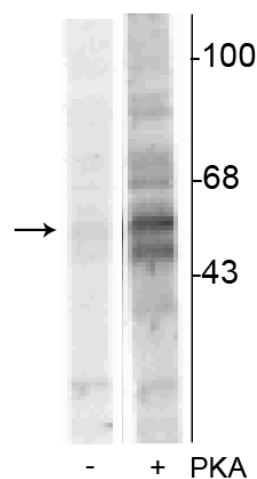
**Antibody Specificity:** Specific for endogenous levels of the ~55 kDa tryptophan hydroxylase protein phosphorylated at Ser<sup>58</sup>.

**Purification Method:** Prepared from pooled rabbit serum by affinity purification via sequential chromatography on phospho and non-phosphopeptide affinity columns.

**Quality Control Tests:** Western blots performed on each lot.

**Packaging:** 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg BSA per ml and 50% glycerol.

**Storage and Stability:** Shipped on blue ice. Storage at -20°C is recommended, as aliquots may be taken without freeze/thawing due to presence of 50% glycerol. Stable for at least 1 year at -20°C.



Western blot of recombinant tryptophan hydroxylase incubated in the absence (-) and presence (+) of cAMP-dependent protein kinase showing specific immunolabeling of the ~55 kDa tryptophan hydroxylase protein phosphorylated at Ser<sup>58</sup>.

### Product Specific Reference:

Kuhn DM, Sakowski SA, Geddes TJ, Wilkerson C, Haycock JW (2007) Phosphorylation and activation of tryptophan hydroxylase 2: identification of serine-19 as the substrate site for calcium, calmodulin-dependent protein kinase II. *J Neurochem* 103(4):1567-73.

### General References:

Jiang GC, Yohrling GJ, Schmitt JD, Vrana KE (2000) Identification of substrate orienting and phosphorylation sites within tryptophan hydroxylase using homology-based molecular modeling. *J Mol Biol* 302:1005-1017.

Johansen PA, Jennings I, Cotton RG, Kuhn DM (1996) Phosphorylation and activation of tryptophan hydroxylase by exogenous protein kinase A. *J Neurochem* 66:817-823.

Kuhn, DM, Arthur, Jr, R, States, JC (1997) Phosphorylation and activation of brain tryptophan hydroxylase: identification of serine-58 as a substrate site for protein kinase A. *J Neurochem* 68:2220-2223.

Martinez A, Knappskog PM, Haavik J (2001) Structural approach into human tryptophan hydroxylase and its implications for the regulation of serotonin biosynthesis. *Curr Med Chem* 8:1077-1091.