

# Tyrosine Hydroxylase Polyclonal Antibody

Catalog Number OPA1-04050

Product data sheet

Details		Species Reactivity	
Size	100 µL	Tested species reactivity	Many
Host/Isotope	Rabbit IgG	Published species reactivity	Rat, Mouse, Human
Class	Polyclonal	Tested Applications	
Type	Antibody	Immunofluorescence (IF)	1:1,000
Immunogen	SDS-denatured, native rat tyrosine hydroxylase purified from pheochromocytoma	Immunohistochemistry (Frozen) (IHC (F))	1:1,000
Conjugate	Unconjugated	Western Blot (WB)	1:1,000
Form	Liquid	Published Applications	
Purification	Affinity chromatography	Immunohistochemistry - Free Floating (IHC (Free))	See 1 publications below
Storage buffer	0.01M HEPES, pH 7.5, with 0.15M NaCl, 0.1mg/ml BSA, 50% glycerol	Immunohistochemistry (IHC)	See 6 publications below
Contains	no preservative	* Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.	
Storage Conditions	-20° C, Avoid Freeze/Thaw Cycles		

## Product specific information

In Western blot, this antibody detects a single ~60 kDa protein representing tyrosine hydroxylase from rat brain lysates of PC-12 cells stimulated by okadaic acid. Immunohistochemical staining of TH in human brain with OPA1-04050 results in intense labeling of the dopaminergic neurons in the substantia nigra.

Store at -20°C short term, 80°C long term.

## Background/Target Information

Tyrosine hydroxylase (TH) is the rate-limiting enzyme in the synthesis of the catecholamine neurotransmitters (dopamine, epinephrine, and norepinephrine). It is responsible for the conversion of L-tyrosine to L-dopa in the catecholamine synthesis pathway. In all species, catecholamine synthesis is regulated by the interaction of TH with a cofactor, tetrahydrobiopterin (BH4). BH4 binds to the TH catalytic domain, resulting in enzymatic activity. Unlike TH in non-primate species, four human TH mRNA splice variants (hTH1-hTH4) have been isolated. These variants are identical in their catalytic domain, but differ in their N-terminal, regulatory domains. Little information has been uncovered regarding the regulatory role of these isoforms in vivo.

The role of TH in the synthesis of catecholamine neurotransmitters suggests a correlation between the enzyme and a number of neuropathogenic diseases characterized by irregular catecholamine levels. Catecholamine level irregularities have been uncovered in Parkinson's disease, schizophrenia, and dystonia, as well as a variety of cardiovascular diseases.

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## PubMed References For Tyrosine Hydroxylase Polyclonal Antibody

### 1 Immunohistochemistry - Free Floating References

Species / Dilution	Summary
	OPA1-04050 was used in immunohistochemistry - free floating to assess the effects of peripherally administered Nrg1beta1 in a toxin-based mouse model of Parkinson's disease
Mouse / 1:500	Journal of neurochemistry (May 2015; 133: 590) <b>"Systemically administered neuregulin-1β1 rescues nigral dopaminergic neurons via the ErbB4 receptor tyrosine kinase in MPTP mouse models of Parkinson's disease."</b> Author(s):Depboylu C,Rösler TW,de Andrade A,Oertel WH,Höglinger GU PubMed Article URL: <a href="http://dx.doi.org/10.1111/jnc.13026">http://dx.doi.org/10.1111/jnc.13026</a>

### 6 Immunohistochemistry References

Species / Dilution	Summary
	OPA1-04050 was used in immunohistochemistry to use transgenic mice to investigate the regulation of tyrosine hydroxylase positive cells following prolonged dopaminergic denervation
Mouse / 1:400	Journal of chemical neuroanatomy (Nov 2014; 61-62: 169) <b>"Transcriptional and structural plasticity of tyrosine hydroxylase expressing neurons in both striatum and nucleus accumbens following dopaminergic denervation."</b> Author(s):Depboylu C,Klietz M,Maurer L,Oertel WH,Kobayashi K,Weihe E,Höglinger GU,Schäfer MK PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.jchemneu.2014.10.003">http://dx.doi.org/10.1016/j.jchemneu.2014.10.003</a>
	OPA1-04050 was used in immunohistochemistry to study the roles of brain-resident microglial cells and infiltrating myeloid cells in a murine model of Parkinson's disease
Mouse / 1:500	Experimental neurology (Dec 2012; 238: 183) <b>"Brain-resident microglia predominate over infiltrating myeloid cells in activation, phagocytosis and interaction with T-lymphocytes in the MPTP mouse model of Parkinson disease."</b> Author(s):Depboylu C,Stricker S,Ghobril JP,Oertel WH,Priller J,Höglinger GU PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.expneurol.2012.08.020">http://dx.doi.org/10.1016/j.expneurol.2012.08.020</a>
	OPA1-04050 was used in immunohistochemistry to investigate the therapeutic effect of L-type channel antagonist isradipine in mouse Parkinson disease model
Mouse / 1:1000	Neurobiology of disease (Aug 2011; 43: 364) <b>"The L-type channel antagonist isradipine is neuroprotective in a mouse model of Parkinson's disease."</b> Author(s):Ilijic E,Guzman JN,Surmeier DJ PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.nbd.2011.04.007">http://dx.doi.org/10.1016/j.nbd.2011.04.007</a>
	OPA1-04050 was used in immunohistochemistry to investigate the effect of IGF1 on painful diabetic neuropathy
Rat / 1:6000	Neurobiology of disease (Jul 2011; 43: 275) <b>"Changes in serotonergic and noradrenergic descending pain pathways during painful diabetic neuropathy: the preventive action of IGF1."</b> Author(s):Morgado C,Silva L,Pereira-Terra P,Tavares I PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.nbd.2011.04.001">http://dx.doi.org/10.1016/j.nbd.2011.04.001</a>
	OPA1-04050 was used in immunohistochemistry to investigate the distribution of choline acetyltransferase and tyrosine hydroxylase in cholinergic and catecholaminergic neurons
Human / 1:600	Acta neuropathologica (Nov 2010; 120: 633) <b>"Cell type specific sequestration of choline acetyltransferase and tyrosine hydroxylase within Lewy bodies."</b> Author(s):Dugger BN,Dickson DW PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00401-010-0739-1">http://dx.doi.org/10.1007/s00401-010-0739-1</a>
	OPA1-04050 was used in immunohistochemistry to determine whether incidental Lewy body disease (iLBD) is associated with preclinical Parkinson disease
Human / 1:600	Archives of neurology (Aug 2008; 65: 1074) <b>"Incidental Lewy body disease and preclinical Parkinson disease."</b> Author(s):DelleDonne A,Klos KJ,Fujishiro H,Ahmed Z,Parisi JE,Josephs KA,Frigerio R,Burnett M,Wszolek ZK,Uitti RJ,Ahlskog JE,Dickson DW PubMed Article URL: <a href="http://dx.doi.org/10.1001/archneur.65.8.1074">http://dx.doi.org/10.1001/archneur.65.8.1074</a>

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