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PPARGC1A Antibody

Catalog # ASC11765

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q9UBK2
Other Accession	NP_037393, 7019499
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	91027
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	PPARGC1A antibody can be used for detection of PPARGC1A by Western blot at 1 - 2 g/ml. Antibody can also be used for Immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	10891
Other Names	Peroxisome proliferator-activated receptor gamma coactivator 1-alpha, PGC-1-alpha, PPAR-gamma coactivator 1-alpha, PPARGC-1-alpha, Ligand effect modulator 6, PPARGC1A, LEM6, PGC1, PGC1A, PPARGC1
Target/Specificity	PPARGC1A; PPARGC1A antibody is human, mouse and rat reactive. At least three isoforms of PPARGC1A are known to exist; this antibody only detects the longest isoform.
Reconstitution & Storage	PPARGC1A antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	PPARGC1A Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	PPARGC1A
Function	Transcriptional coactivator for steroid receptors and nuclear receptors (PubMed:10713165, PubMed:20005308, PubMed:21376232, PubMed:28363985, PubMed:32433991). Greatly increases the transcriptional activity of PPARG and thyroid hormone receptor on the uncoupling protein promoter (PubMed:10713165, PubMed:20005308, PubMed:21376232). Can regulate key mitochondrial genes that contribute to the program of adaptive thermogenesis (PubMed:10713165, PubMed:20005308, PubMed:21376232). Plays an essential role in metabolic reprogramming in response to dietary

	availability through coordination of the expression of a wide array of genes involved in glucose and fatty acid metabolism (PubMed:10713165, PubMed:20005308, PubMed:21376232). Acts as a key regulator of gluconeogenesis: stimulates hepatic gluconeogenesis by increasing the expression of gluconeogenic enzymes, and acting together with FOXO1 to promote the fasting gluconeogenic program (PubMed:16753578, PubMed:23142079). Induces the expression of PERM1 in the skeletal muscle in an ESRRA- dependent manner (PubMed:23836911). Also involved in the integration of the circadian rhythms and energy metabolism (By similarity). Required for oscillatory expression of clock genes, such as BMAL1 and NR1D1, through the coactivation of RORA and RORC, and metabolic genes, such as PDK4 and PEPCK (By similarity).
Cellular Location	[Isoform 1]: Nucleus. Nucleus, PML body {ECO:0000250|UniProtKB:O70343} [Isoform B4-8a]: Cytoplasm. Nucleus [Isoform 9]: Nucleus
Tissue Location	Heart, skeletal muscle, liver and kidney. Expressed at lower levels in brain and pancreas and at very low levels in the intestine and white adipose tissue. In skeletal muscle, levels were lower in obese than in lean subjects and fasting induced a 2-fold increase in levels in the skeletal muscle in obese subjects

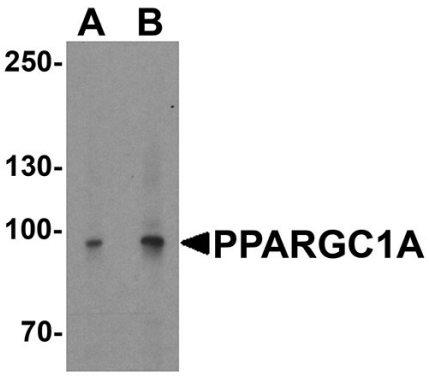
Background

The peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PPARGC1A), also known as LEM-6, is a transcriptional coactivator that regulates the genes involved in energy metabolism (1). PPARGC1A interacts with PPARgamma, which permits the interaction of PPARGC1A with multiple transcription factors. PPARGC1A can interact with, and regulate the activities of, cAMP response element binding protein (CREB) and nuclear respiratory factors (NRFs). It provides a direct link between external physiological stimuli and the regulation of mitochondrial biogenesis, and is a major factor that regulates muscle fiber type determination (2). PPARGC1A may be also involved in the development of obesity (3).

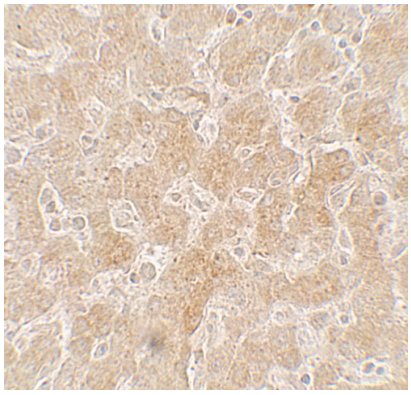
References

Tsuemi T and La Spada AR. PGC-1a at the intersection of bioenergetics regulation and neuron function: from Huntington's disease to Parkinson's disease and beyond. Prog. Neurobiol. 2012; 97:142-51.
Kang C and Li Ji L. Role of PGC-1a signaling in skeletal muscle health and disease. Ann. NY Acad. Sci. 2012; 1271:110-7.
Liu C and Lin JD. PGC-1 coactivators in the control of energy metabolism. Acta Biochim. Biophys. Sin. 2011; 43:248-57.

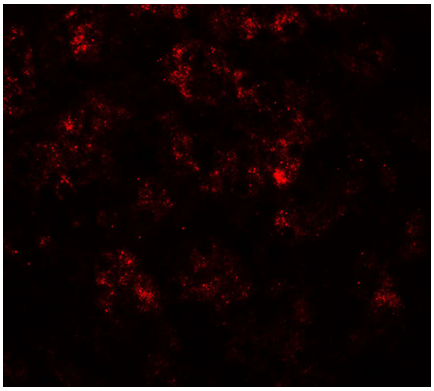
Images



Western blot analysis of PPARGC1A in mouse liver tissue lysate with PPARGC1A antibody at (A) 1 and (B) 2 µg/ml.



Immunohistochemistry of PPARGC1A in human liver tissue with PPARGC1A antibody at 5 µg/mL.



Immunofluorescence of PPARGC1A in human liver tissue with PPARGC1A antibody at 20 µg/mL.