

UCP3 Polyclonal Antibody

Catalog NumberPA1-055

Product data sheet

Details		Species Reactivity	
Size	100 µg	Species reactivity	Dog, Mouse, Rat
Host/Isotope	Rabbit / IgG	Published species	Rat, Mouse, Human, Not Applicable
Class	Polyclonal	Tested Applications	
Type	Antibody	Western Blot (WB)	Dilution *0.5-2 µg/mL
Immunogen	Synthetic peptide corresponding to residues C R(295) A L M K V Q V L R E S P F(308) of mouse and rat UCP-3.	Published Applications	
Conjugate	Unconjugated	Western Blot (WB)	See 16 publications below
Form	Liquid	* 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.	
Concentration	1 mg/mL		
Purification	Antigen affinity chromatography		
Storage buffer	PBS with 1mg/mL BSA		
Contains	0.05% sodium azide		
Storage Conditions	-20° C, Avoid Freeze/Thaw Cycles		

Product specific information

PA1-055 detects uncoupling protein-3 (UCP-3) mouse, rat, and canine tissues. This antibody will also detect recombinant human UCP-3, but does not detect UCP-3 from mouse liver or kidney. PA1-055 has been successfully used in Western blot procedures. By Western blot, this antibody detects an ~30 kDa protein representing UCP-3 from rat heart homogenate. The PA1-055 immunogen is a synthetic peptide corresponding to residues C R(295) A L M K V Q V L R E S P F(308) of mouse and rat UPC-3. This peptide differs from the porcine and human UCP-3 sequence by a single amino acid substitution. PA1-055 immunizing peptide (Cat. # PEP-074) is available for use in neutralization and control experiments.

Background/Target Information

The uncoupling protein UCP1 (formerly designated UCP) is an integral membrane protein unique to brown adipose tissue mitochondria. UCP1 forms a dimer that acts as a proton channel, which can uncouple oxidative phosphorylation by dissipating the electrochemical potential across the inner mitochondrial membrane. This process induces heat production in brown adipose tissue and is involved in regulation of body temperature and glucose metabolism. UCP2 is a structurally related protein that also uncouples mitochondrial respiration. It is more widely expressed in human and mouse tissues, including white adipose tissue and muscle, than is UCP1. UCP2 is thought to play a role in body weight regulation. An additional UCP family member, UCP3, is highly muscle specific and is possibly involved in the uncoupling of oxidative phosphorylation in skeletal muscle.

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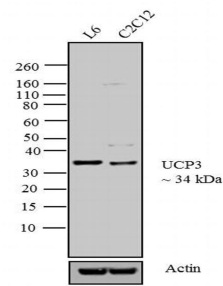
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UCP3 Antibody (PA1-055) in WB

Western blot analysis was performed on membrane enriched extracts (30 µg lysate) of L6 (Lane 1) and C2C12 (Lane 2). The blot was probed with Anti-UCP3 Rabbit Polyclonal Antibody (Product # PA1-055, 1 µg/mL) and detected by chemiluminescence using Goat anti-Rabbit IgG (Heavy Chain) Superclonal™ Secondary Antibody, HRP conjugate (Product # A27036, 0.4 µg/mL, 1:2500 dilution). A 34 kDa band corresponding to UCP3 was observed across the cell lines tested. Known quantity of protein samples were electrophoresed using Novex® NuPAGE® ; 12% Bis-Tris gel (Product # NP0342BOX), XCell SureLock™ Electrophoresis System (Product # EI0002) and Novex® Sharp Pre-Stained Protein Standard (Product # LC5800). Resolved proteins were then transferred onto a nitrocellulose membrane with iBlot® 2 Dry Blotting System (Product # IB21001). The membrane was probed with the relevant primary and secondary Antibody following blocking with 5 % skimmed milk. Chemiluminescent detection was performed using Pierce™ ECL Western Blotting Substrate (Product # 32106).



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PubMed References For UCP3 Polyclonal Antibody

16 Western Blot References

Species / Dilution	Summary
Mouse / Not Cited	PA1-055 was used in western blot to investigate the involvement of bradykinin signaling in diabetic cardiomyopathy
	Endocrinology (2010; 151: 3536) "Loss of bradykinin signaling does not accelerate the development of cardiac dysfunction in type 1 diabetic akita mice." Author(s):Wende AR,Soto J,Olsen CD,Pires KM,Schell JC,Larrieu-Lahargue F,Litwin SE,Kakoki M,Takahashi N,Smithies O,Abel ED PubMed Article URL: http://dx.doi.org/10.1210/en.2010-0256
Rat / Not Cited	PA1-055 was used in western blot to investigate the effect of exercise on the treatment of muscle impairment
	American journal of physiology. Regulatory, integrative and comparative physiology (2011; 300: R175) "Exercise training reverses impaired skeletal muscle metabolism induced by artificial selection for low aerobic capacity." Author(s):Lessard SJ,Rivas DA,Stephenson EJ,Yaspelkis BB,Koch LG,Britton SL,Hawley JA PubMed Article URL: http://dx.doi.org/10.1152/ajpregu.00338.2010
Human / Not Cited	PA1-055 was used in western blot to study the regulation of brown adipocyte UCP3 transcription by a novel intronic enhancer that binds SP1 and SP3
	PloS one (2014; 8:) "A novel SP1/SP3 dependent intronic enhancer governing transcription of the UCP3 gene in brown adipocytes." Author(s):Hoffmann C,Zimmermann A,Hinney A,Volckmar AL,Jarrett HW,Fromme T,Klingenspor M PubMed Article URL: http://dx.doi.org/10.1371/journal.pone.0083426
Mouse / Not Cited	PA1-055 was used in Protein Assay to test that switching to a standard chow diet after weaning would attenuate systemic metabolic disorders and cardiac and mitochondrial dysfunction associated with maternal and postnatal high-fat/high-sucrose (HFHS) diet in mice.
	Metabolites (2022; 12:) "Switching to a Standard Chow Diet at Weaning Improves the Effects of Maternal and Postnatal High-Fat and High-Sucrose Diet on Cardiometabolic Health in Adult Male Mouse Offspring." Author(s):Chiñas Merlin A,Gonzalez K,Mockler S,Perez Y,Jia UA,Chicco AJ,Ullevig SL,Chung E PubMed Article URL: http://dx.doi.org/10.3390/metabo12060563
Mouse / Not Cited	PA1-055 was used in western blot to investigate the role of TGF-beta 1 in heart response to beta-epinephrine
	PloS one (2012; 6:) "Transforming growth factor oppositely regulates the hypertrophic and contractile response to -adrenergic stimulation in the heart." Author(s):Huntgeburth M,Tiemann K,Shahverdyan R,Schlüter KD,Schreckenberger R,Gross ML,Mödersheim S,Caglayan E,Müller-Ehmsen J,Ghanem A,Vantler M,Zimmermann WH,Böhm M,Rosenkranz S PubMed Article URL: http://dx.doi.org/10.1371/journal.pone.0026628
Rat / 1:2,000	PA1-055 was used in western blot to investigate the influence of AICAR or muscle contraction on AMPK activity in old and young adult rat muscles
	The Journal of physiology (2009; 587: 2077) "AMP-activated protein kinase response to contractions and treatment with the AMPK activator AICAR in young adult and old skeletal muscle." Author(s):Thomson DM,Brown JD,Fillmore N,Ellsworth SK,Jacobs DL,Winder WW,Fick CA,Gordon SE PubMed Article URL: http://dx.doi.org/10.1113/jphysiol.2008.166512
Mouse / 1:1000	PA1-055 was used in western blot to investigate the differences of proton conductance mechanism between skeletal muscle and heart
	Biochimica et biophysica acta (2010; 1797: 1716) "GDP and carboxyatractylate inhibit 4-hydroxynonenal-activated proton conductance to differing degrees in mitochondria from skeletal muscle and heart." Author(s):Aguirre E,Cadenas S PubMed Article URL: http://dx.doi.org/10.1016/j.bbabbio.2010.06.009
Mouse / 1:1000	PA1-055 was used in western blot to study the role of Nrf2 when mouse cardiomyocytes are treated with 4-Hydroxy-2-nonenal
	Free radical biology & medicine (2015; 88: 427) "4-Hydroxynonenal induces Nrf2-mediated UCP3 upregulation in mouse cardiomyocytes." Author(s):López-Bernardo E,Anedda A,Sánchez-Pérez P,Acosta-Iborra B,Cadenas S PubMed Article URL: http://dx.doi.org/10.1016/j.freeradbiomed.2015.03.032

	PA1-055 was used in Western Blotting to evaluate the effects of Western diet-induced obesity on skeletal muscle mitochondrial function.
Rat / Not Cited	American journal of physiology. Endocrinology and metabolism (2012; 302: E1541) "Skeletal muscle respiratory capacity is enhanced in rats consuming an obesogenic Western diet." Author(s):Stephenson EJ,Camera DM,Jenkins TA,Kosari S,Lee JS,Hawley JA,Stepto NK PubMed Article URL: http://dx.doi.org/10.1152/ajpendo.00590.2011
	PA1-055 was used in western blot to investigate the expression of mitochondrial uncoupling protein 3 and adenine nucleotide translocase 1 genes in rat heart during development and its role in mitochondrial membrane potential
Rat / 1:1000	Journal of molecular and cellular cardiology (2003; 35: 321) "Expression of mitochondrial uncoupling protein 3 and adenine nucleotide translocase 1 genes in developing rat heart: putative involvement in control of mitochondrial membrane potential." Author(s):Skárka L,Bardová K,Brauner P,Flachs P,Jarkovská D,Kopecký J,Ostádal B PubMed Article URL: http://dx.doi.org/10.1016/s0022-2828(03)00016-6
	PA1-055 was used in western blot to investigate the role of LKB1 in skeletal muscle metabolic processes
Mouse / 1:4000	Acta physiologica (Oxford, England) (2011; 201: 457) "Effect of LKB1 deficiency on mitochondrial content, fibre type and muscle performance in the mouse diaphragm." Author(s):Brown JD,Hancock CR,Mongillo AD,Benjamin Barton J,DiGiovanni RA,Parcell AC,Winder WW,Thomson DM PubMed Article URL: http://dx.doi.org/10.1111/j.1748-1716.2010.02226.x
	PA1-055 was used in western blot to study the role of casitas b-lineage lymphoma (c-Cbl) in the whole-body fuel homeostasis.
Mouse / Not Cited	The Journal of clinical investigation (2004; 114: 1326) "c-Cbl-deficient mice have reduced adiposity, higher energy expenditure, and improved peripheral insulin action." Author(s):Molero JC,Jensen TE,Withers PC,Couzens M,Herzog H,Thien CB,Langdon WY,Walder K,Murphy MA,Bowtell DD,James DE,Cooney GJ PubMed Article URL: http://dx.doi.org/10.1172/JCI21480
	PA1-055 was used in western blot to investigate the role of ERR gamma in coordinating type I muscle metabolism and vascular transformation in muscles
Mouse / Not Cited	Cell metabolism (2011; 13: 283) "Exercise and PGC-1-independent synchronization of type I muscle metabolism and vasculature by ERR." Author(s):Narkar VA,Fan W,Downes M,Yu RT,Jonker JW,Alaynick WA,Banayo E,Karunasiri MS,Lorca S,Evans RM PubMed Article URL: http://dx.doi.org/10.1016/j.cmet.2011.01.019
	PA1-055 was used in western blot to study the protective effects against cardiac steatosis and dilated cardiomyopathy of specifically overexpressing triglyceride lipase in cardiomyocytes in a murine model of diet-induced obesity
Mouse / Not Cited	International journal of obesity (2005) (2014; 38: 205) "Cardiac-specific adipose triglyceride lipase overexpression protects from cardiac steatosis and dilated cardiomyopathy following diet-induced obesity." Author(s):Pulinilkunnil T,Kienesberger PC,Nagendran J,Sharma N,Young ME,Dyck JR PubMed Article URL: http://dx.doi.org/10.1038/ijo.2013.103
	PA1-055 was used in western blot to study the effect of vitamin E and C on dexamethasone-induced glucose intolerance in rats
Mouse / Not Cited	American journal of physiology. Regulatory, integrative and comparative physiology (2012; 302: R49) "Dietary supplementation with vitamin E and C attenuates dexamethasone-induced glucose intolerance in rats." Author(s):Williams DB,Wan Z,Frier BC,Bell RC,Field CJ,Wright DC PubMed Article URL: http://dx.doi.org/10.1152/ajpregu.00304.2011
	PA1-055 was used in western blot to investigate the ameliorative effect of Ppargc1b expression in insulin resistance in rat skeletal muscle
Rat / Not Cited	Diabetologia (2011; 54: 1417) "Amelioration of lipid-induced insulin resistance in rat skeletal muscle by overexpression of Pgc-1 involves reductions in long-chain acyl-CoA levels and oxidative stress." Author(s):Wright LE,Brandon AE,Hoy AJ,Forsberg GB,Lelliott CJ,Reznick J,Löfgren L,Oscarsson J,Strömstedt M,Cooney GJ,Turner N PubMed Article URL: http://dx.doi.org/10.1007/s00125-011-2068-x

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