

UCP1 (E-6): sc-518171

BACKGROUND

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 UCP. UCP2 is thought to play a role in body weight regulation.

REFERENCES

1. Nicholls, D.G., et al. 1984. Thermogenic mechanisms in brown fat. *Physiol. Rev.* 64: 1-64.
2. Jacobsson, A., et al. 1985. Mitochondrial uncoupling protein from mouse brown fat. Molecular cloning, genetic mapping and mRNA expression. *J. Biol. Chem.* 260: 16250-16254.
3. Cassard, A.M., et al. 1990. Human uncoupling protein gene: structure, comparison with rat gene and assignment to the long arm of chromosome 4. *J. Cell Biochem.* 43: 255-264.
4. Himms-Hagen, J. 1990. Brown adipose tissue thermogenesis: interdisciplinary studies. *FASEB J.* 4: 2890-2898.
5. Fleury, C., et al. 1997. Uncoupling protein-2: a novel gene linked to obesity and hyperinsulinemia. *Nat. Genet.* 15: 269-272.
6. Suh, Y.H., et al. 2004. Overexpression of short heterodimer partner recovers impaired glucose-stimulated Insulin secretion of pancreatic β cells overexpressing UCP2. *J. Endocrinol.* 183: 133-144.

CHROMOSOMAL LOCATION

Genetic locus: UCP1 (human) mapping to 4q31.1; Ucp1 (mouse) mapping to 8 C2.

SOURCE

UCP1 (E-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 195-214 of UCP1 of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

UCP1 (E-6) is available conjugated to agarose (sc-518171 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-518171 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-518171 PE), fluorescein (sc-518171 FITC), Alexa Fluor[®] 488 (sc-518171 AF488), Alexa Fluor[®] 546 (sc-518171 AF546), Alexa Fluor[®] 594 (sc-518171 AF594) or Alexa Fluor[®] 647 (sc-518171 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-518171 AF680) or Alexa Fluor[®] 790 (sc-518171 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

UCP1 (E-6) is recommended for detection of UCP1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for UCP1 siRNA (h): sc-42680, UCP1 siRNA (m): sc-42681, UCP1 shRNA Plasmid (h): sc-42680-SH, UCP1 shRNA Plasmid (m): sc-42681-SH, UCP1 shRNA (h) Lentiviral Particles: sc-42680-V and UCP1 shRNA (m) Lentiviral Particles: sc-42681-V.

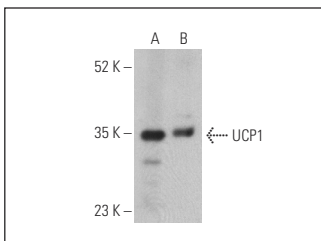
Molecular Weight of UCP1: 33 kDa.

Positive Controls: human kidney extract: sc-363764 or mouse brown adipose extract: sc-516735.

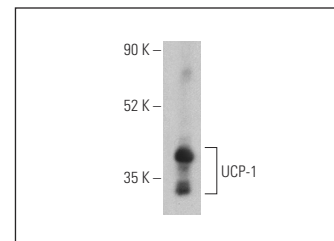
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

DATA



UCP1 (E-6): sc-518171. Western blot analysis of UCP1 expression in human kidney (A) and mouse brown adipose (B) tissue extracts. Detection reagent used: m-IgG₁ BP-HRP: sc-525408.



UCP-1 (E-6): sc-518171. Western blot analysis of full length human recombinant UCP1. Detection reagent used: m-IgG₁ BP-HRP: sc-525408.

SELECT PRODUCT CITATIONS

1. Mukai, T. and Kusudo, T. 2023. Bidirectional effect of vitamin D on brown adipogenesis of C3H10T1/2 fibroblast-like cells. *PeerJ* 11: e14785.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.