

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 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.

REFERENCES

- Nicholls, D.G., et al. 1984. Thermogenic mechanisms in brown fat. *Physiol. Rev.* 64: 1-64.
- 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.

CHROMOSOMAL LOCATION

Genetic locus: UCP3 (human) mapping to 11q13.4; Ucp3 (mouse) mapping to 7 E3.

SOURCE

UCP3 (E-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of UCP3 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-31387 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

UCP3 (E-18) is recommended for detection of UCP3 isoforms 1 (also designated UCP3L) and 3 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); may cross-react with UCP2.

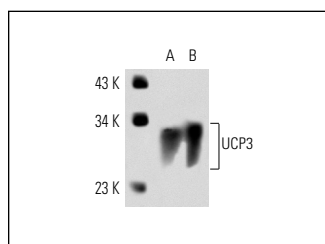
UCP3 (E-18) is also recommended for detection of UCP3 isoforms 1 (also designated UCP3L) and 3 in additional species, including equine, canine, bovine and porcine.

Molecular Weight of UCP3: 33 kDa.

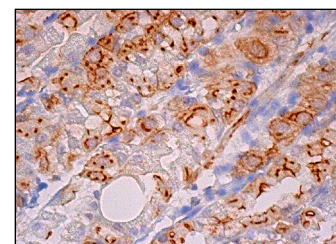
Positive Controls: rat skeletal muscle extract: sc-364810.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2053 or ABC: sc-2023 goat IgG Staining Systems.

DATA

UCP3 (E-18): sc-31387. Western blot analysis of UCP3 expression in rat skeletal muscle (A) and mouse heart (B) tissue extracts.



UCP3 (E-18): sc-31387. Immunoperoxidase staining of formalin fixed, paraffin-embedded human stomach tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

- Dong, Y.M., et al. 2011. High dietary intake of medium-chain fatty acids during pregnancy in rats prevents later-life obesity in their offspring. *J. Nutr. Biochem.* 22: 791-797.
- Wong, H.S., et al. 2015. A cistanches herba fraction/β-sitosterol causes a redox-sensitive induction of mitochondrial uncoupling and activation of adenosine monophosphate-dependent protein kinase/peroxisome proliferator-activated receptor γ coactivator-1 in C2C12 myotubes: a possible mechanism underlying the weight reduction effect. *Evid. Based Complement. Alternat. Med.* 2015: 142059.

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.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.