SANTA CRUZ BIOTECHNOLOGY, INC.

UCP3 (D-20): sc-31385



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

- 1. 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.
- Himms-Hagen, J. 1990. Brown adipose tissue thermogenesis: interdisciplinary studies. FASEB J. 4: 2890-2898.
- 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.
- Boss, O., et al. 1997. Uncoupling protein-3: a new member of the mitochondrial carrier family with tissue-specific expression. FEBS Lett. 408: 39-42.
- Fleury, C., et al. 1997. Uncoupling protein-2: a novel gene linked to obesity and hyperinsulinemia. Nature Gen. 15: 269-272.

CHROMOSOMAL LOCATION

Genetic locus: UCP3 (human) mapping to 11q21; Ucp3 (mouse) mapping to 7 E1.

SOURCE

UCP3 (D-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region 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-31385 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, **D0 NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

UCP3 (D-20) is recommended for detection of UCP3 isoforms 1 and 2 (also designated UCP3_L and UCP3_S) and to a lesser extent, isoform 3 of human and, to a lesser extent, mouse and rat 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for UCP3 siRNA (h): sc-42684 and UCP3 siRNA (m): sc-42685.

Molecular Weight of UCP3: 33 kDa.

Positive Controls: rat skeletal muscle extract or mouse heart extract: sc-2254.

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.

DATA



UCP3 (D-20): sc-31385. Western blot analysis of UCP3 expression in A10 $({\rm A})$ and Sol8 $({\rm B})$ whole cell lysates.

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.