SANTA CRUZ BIOTECHNOLOGY, INC.

# UCP1 (4E5): sc-293418

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## 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.

## CHROMOSOMAL LOCATION

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

## SOURCE

UCP1 (4E5) is a mouse monoclonal antibody raised against amino acids 232-267 representing partial length UCP1 of human origin.

## PRODUCT

Each vial contains 100 µg $IgG_{2a}$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

UCP1 (4E5) is recommended for detection of UCP1 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)] 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: A549 cell lysate: sc-2413, NIH/3T3 whole cell lysate: sc-2210 or human PBL tissue extract.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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).

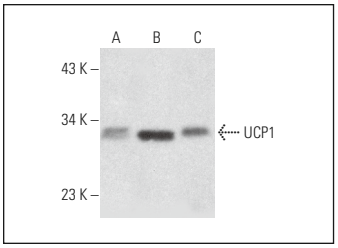
## STORAGE

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

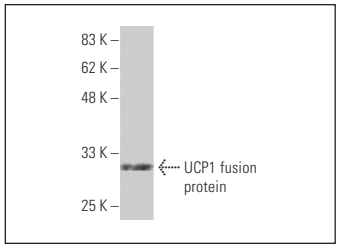
## RESEARCH USE

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

## DATA




UCP1 (4E5): sc-293418. Western blot analysis of UCP1 expression in A549 (**A**) and NIH/3T3 (**B**) whole cell lysates and human PBL tissue extract (**C**).




UCP1 (4E5): sc-293418. Western blot analysis of human recombinant UCP1 fusion protein.

## SELECT PRODUCT CITATIONS


1. Gallot, Y.S., et al. 2017. Distinct roles of TRAF6 and TAK1 in the regulation of adipocyte survival, thermogenesis program, and high-fat diet-induced obesity. Oncotarget 8: 112565-112583.
2. Xu, H. and Li, F. 2018. MiR-127 aggravates myocardial failure by promoting the TGF-β1/Smad3 signaling. Mol. Med. Rep. 18: 4839-4846.
3. Bencheikh, L., et al. 2019. Dynamic gene regulation by nuclear colony-stimulating factor 1 receptor in human monocytes and macrophages. Nat. Commun. 10: 1935.
4. de Oliveira, M., et al. 2020. The roles of triiodothyronine and irisin in improving the lipid profile and directing the browning of human adipose subcutaneous cells. Mol. Cell. Endocrinol. 506: 110744.
5. Khalafi, M., et al. 2020. The impact of moderate-intensity continuous or high-intensity interval training on adipogenesis and browning of subcutaneous adipose tissue in obese male rats. Nutrients 12: 925.
6. Lin, H.Y., et al. 2020. Abrogation of Toll like receptor 4 (TLR4) mitigates obesity-induced oxidative stress, proinflammation, and Insulin resistance through metabolic reprogramming of mitochondria in adipose tissue. Antioxid. Redox Signal. 33: 66-86.
7. Rodríguez-Fdez, S., et al. 2020. Vav2 catalysis-dependent pathways contribute to skeletal muscle growth and metabolic homeostasis. Nat. Commun. 11: 5808.
8. Auclair, M., et al. 2021. Pharmacological modulation of RORα controls the fat browning, adaptive thermogenesis and body weight in mice. Am. J. Physiol. Endocrinol. Metab. 320: E219-E233.
9. Park, W.Y., et al. 2022. PEX13 is required for thermogenesis of white adipose tissue in cold-induced mice. Biochim. Biophys. Acta Mol. Cell Biol. Lipids 1867: 159046.


## PROTOCOLS

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