SANTA CRUZ BIOTECHNOLOGY, INC.

# ATPIF1 (A-12): sc-162554

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

Mitochondrial ATP synthases (ATPases) transduce the energy contained in membrane electrochemical proton gradients into the energy required for synthesis of high-energy phosphate bonds. ATPases contain two linked complexes: $F_1$, the hydrophilic catalytic core; and $F_0$, the membrane-embedded protein channel. $F_1$ consists of three $\alpha$ chains and three $\beta$ chains, which are weakly homologous, as well as one $\gamma$ chain, one $\delta$ chain and one $\varepsilon$ chain. $F_0$ consists of three subunits: a, b and c. A mitochondrial $F_1$-ATPase inhibitor protein, ATPIF1 (ATPase inhibitory factor 1), also known as IP, IF1, ATPI or ATPIP (ATPase inhibitor protein), binds to the C-terminal region of a $\beta$ subunit of the $F_1$-ATPase at low pH values and, via interference of the $\beta$ and $\gamma$ subunit interaction, ATPIF1 regulates the activity of the $F_1F_0$-ATPase. This reversible ATPIF1 binding to $F_1F_0$-ATPase also occurs on the surface of endothelial cells.

## REFERENCES


1. Ichikawa, N., et al. 1999. Nucleotide sequence of cDNA coding the mitochondrial precursor protein of the ATPase inhibitor from humans. Biosci. Biotechnol. Biochem. 63: 2225-2227.
2. Cabezón, E., et al. 2001. The structure of bovine $IF_1$, the regulatory subunit of mitochondrial F-ATPase. EMBO J. 20: 6990-6996.
3. Contessi, S., et al. 2005. Identification of a conserved calmodulin-binding motif in the sequence of $F_1F_0$ ATPsynthase inhibitor protein. J. Bioenerg. Biomembr. 37: 317-326.
4. Cortes-Hernandez, P., et al. 2005. The inhibitor protein of the $F_1F_0$-ATP synthase is associated to the external surface of endothelial cells. Biochem. Biophys. Res. Commun. 330: 844-849.
5. Burwick, N.R., et al. 2005. An inhibitor of the $F_1$ subunit of ATP synthase (IF1) modulates the activity of angiostatin on the endothelial cell surface. J. Biol. Chem. 280: 1740-1745.
6. Gledhill, J.R. and Walker, J.E. 2006. Inhibitors of the catalytic domain of mitochondrial ATP synthase. Biochem. Soc. Trans. 34: 989-992.
7. Garcia, J.J., et al. 2006. The inhibitor protein (IF1) promotes dimerization of the mitochondrial $F_1F_0$-ATP synthase. Biochemistry 45: 12695-12703.
8. Wittig, I., et al. 2006. Supercomplexes and subcomplexes of mitochondrial oxidative phosphorylation. Biochim. Biophys. Acta 1757: 1066-1072.
9. Huang, L.J., et al. 2007. Suppression of mitochondrial ATPase inhibitor protein (IF1) in the liver of late septic rats. Biochim. Biophys. Acta 1767: 888-896.


## CHROMOSOMAL LOCATION

Genetic locus: Atpif1 (mouse) mapping to 4 D2.3.

## SOURCE

ATPIF1 (A-12) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of ATPIF1 of mouse 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-162554 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

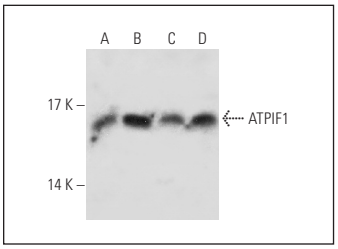
ATPIF1 (A-12) is recommended for detection of ATPIF1 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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).

Suitable for use as control antibody for ATPIF1 siRNA (m): sc-141374, ATPIF1 shRNA Plasmid (m): sc-141374-SH and ATPIF1 shRNA (m) Lentiviral Particles: sc-141374-V.

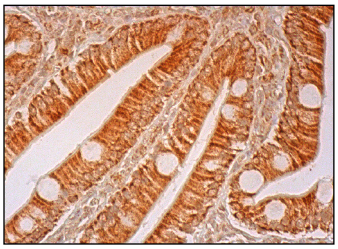
Molecular Weight of ATPIF1: 12 kDa.

Postive Controls: NIH/3T3 whole cell lysate: sc-2210, 3T3-L1 cell lysate: sc-2243 or RAW 264.7 whole cell lysate: sc-2211.

## DATA




ATPIF1 (A-12): sc-162554. Western blot analysis of ATPIF1 expression in NIH/3T3 (**A**), RAW 264.7 (**B**), C2C12 (**C**) and 3T3-L1 (**D**) whole cell lysates.



ATPIF1 (A-12): sc-162554. Immunoperoxidase staining of formalin fixed, paraffin-embedded human duodenum tissue showing cytoplasmic staining of glandular cells.

## 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.