SANTA CRUZ BIOTECHNOLOGY, INC.

TCIRG1 (6H3): sc-293491

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The Power to Question

BACKGROUND

TCIRG1 (T-cell, immune regulator 1, ATPase, H^+ transporting, lysosomal V_0 subunit A3), also known as V-type proton ATPase 116 kDa subunit a isoform 3, T-cell immune response cDNA7 protein (TIRC7), a3, Vph1, Stv1, Atp6i, osteoclastic proton pump 116 kDa subunit (OC116), OPTB1, ATP6N1 or ATP6V0A3, is an 830 amino acid multi-pass membrane protein belonging to the V-ATPase 116 kDa subunit family. Functioning as a component of the proton channel of V-ATPases, TCIRG1 is likely involved in T-cell activation and exists as two alternatively spliced isoforms termed isoform long and isoform short, which are expressed in osteoclasts and thymus, respectively. TCIRG1 gene mutations are associated with a rare genetic disease known as osteopetrosis autosomal recessive type 1 (OPTB1), which is characterized by abnormally dense bone that forms as a result of defective resorption of immature bone.

REFERENCES

1. Heinemann, T., et al. 1999. Genomic organization of the gene coding for TIRC7, a novel membrane protein essential for T cell activation. Genomics 57: 398-406.
2. Van Hul, E., et al. 2002. Localization of the gene causing autosomal dominant osteopetrosis type I to chromosome 11q12-13. J. Bone Miner. Res. 17: 1111-1117.
3. Carn, G., et al. 2002. Sibling pair linkage and association studies between peak bone mineral density and the gene locus for the osteoclast-specific subunit (OC116) of the vacuolar proton pump on chromosome 11p12-13. J. Clin. Endocrinol. Metab. 87: 3819-3824.
4. Sobacchi, C., et al. 2004. Association between a polymorphism affecting an AP1 binding site in the promoter of the TCIRG1 gene and bone mass in women. Calcif. Tissue Int. 74: 35-41.
5. Smirnova, A.S., et al. 2005. Identification of new alternative splice events in the TCIRG1 gene in different human tissues. Biochem. Biophys. Res. Commun. 330: 943-949.
6. Bulwin, G.C., et al. 2006. TIRC7 inhibits T cell proliferation by modulation of CTLA-4 expression. J. Immunol. 177: 6833-6841.
7. Mazzolari, E., et al. 2009. A single-center experience in 20 patients with infantile malignant osteopetrosis. Am. J. Hematol. 84: 473-479.
8. Pangrazio, A., et al. 2009. Characterization of a novel Alu-Alu recombination-mediated genomic deletion in the TCIRG1 gene in five osteopetrotic patients. J. Bone Miner. Res. 24: 162-167.

CHROMOSOMAL LOCATION

Genetic locus: TCIRG1 (human) mapping to 11q13.2.

SOURCE

TCIRG1 (6H3) is a mouse monoclonal antibody raised against amino acids 121-220 representing partial length TCIRG1 of human origin.

STORAGE

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

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

TCIRG1 (6H3) is recommended for detection of TCIRG1 of 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 TCIRG1 siRNA (h): sc-96928, TCIRG1 shRNA Plasmid (h): sc-96928-SH and TCIRG1 shRNA (h) Lentiviral Particles: sc-96928-V.

Molecular Weight of TCIRG1 long isoform: 93 kDa.

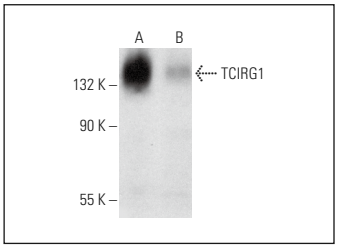
Molecular Weight of TCIRG1 short isoform: 69 kDa.

Positive Controls: U-2 OS cell lysate: sc-2295 or Hs67 whole cell lysate.

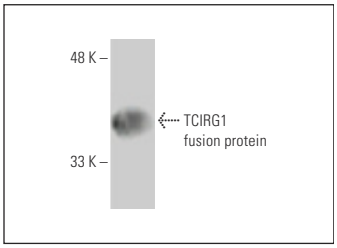
RECOMMENDED SUPPORT REAGENTS

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).

DATA



TCIRG1 (6H3): sc-293491. Western blot analysis of TCIRG1 expression in Hs67 (**A**) and U-2 OS (**B**) whole cell lysates.



TCIRG1 (6H3): sc-293491. Western blot analysis of human recombinant TCIRG1 fusion protein.

SELECT PRODUCT CITATIONS

1. Zhu, F., et al. 2020. TIRC7 inhibits Th1 cells by upregulating the expression of CTLA-4 and STAT3 in mice with acute graft-versus-host disease. Oncol. Rep. 44: 43-54.

RESEARCH USE

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

PROTOCOLS

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