

NRAMP 1 (E-2): sc-398077

BACKGROUND

Natural resistance associated macrophage proteins (NRAMPs) belong to a superfamily of highly conserved integral membrane proteins. NRAMP 1 is an intracellular macrophage protein located at the phagosomal membrane where it functions as a divalent cation transporter for Fe^{2+} , Zn^{2+} and Mn^{2+} . NRAMP 1 is a pH-dependent antiporter that transports metal ions either into or out of the phagosome against a proton gradient. In humans, polymorphisms in the NRAMP 1 gene are linked to susceptibility to *M. tuberculosis* and leprosy. NRAMP 2 is another divalent cation transporter ubiquitously expressed as two splice variants, which are distinguished by the presence (isoform 1) or absence (isoform 2) of an iron response element. In the duodenum of the small intestine, dietary iron regulates NRAMP 2 expression at the brush border. Mutations in the gene for NRAMP 2 in mice and rats result in severe anemia.

REFERENCES

- Cellier, M., et al. 1994. Human natural resistance-associated macrophage protein: cDNA cloning, chromosomal mapping, genomic organization, and tissue-specific expression. *J. Exp. Med.* 180: 1741-1752.
- Vidal, S., et al. 1995. Cloning and characterization of a second human NRAMP gene on chromosome 12q13. *Mamm. Genome* 6: 224-230.
- Abel, L., et al. 1998. Susceptibility to leprosy is linked to the human NRAMP 1 gene. *J. Infect. Dis.* 177: 133-145.
- Lee, P.L., et al. 1998. The human NRAMP2 gene: characterization of the gene structure, alternative splicing, promoter region and polymorphisms. *Blood Cells Mol. Dis.* 24: 199-215.
- Bellamy, R., et al. 1998. Variations in the NRAMP 1 gene and susceptibility to tuberculosis in West Africans. *N. Eng. J. Med.* 338: 640-644.
- Su, M.A., et al. 1998. The G185R mutation disrupts function of the iron transporter NRAMP 2. *Blood* 92: 2157-2163.

CHROMOSOMAL LOCATION

Genetic locus: SLC11A1 (human) mapping to 2q35, SLC11A2 (human) mapping to 12q13.12; Slc11a1 (mouse) mapping to 1 C3, Slc11a2 (mouse) mapping to 15 F1.

SOURCE

NRAMP 1 (E-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 68-99 within an internal region of NRAMP 1 of human origin.

PRODUCT

Each vial contains 200 μg IgG₃ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-398077 P, (100 μg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

NRAMP 1 (E-2) is recommended for detection of NRAMP 1 and NRAMP 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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).

NRAMP 1 (E-2) is also recommended for detection of NRAMP 1 and NRAMP 2 in additional species, including equine, canine and bovine.

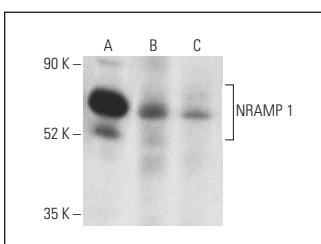
Molecular Weight of NRAMP 1: 65 kDa.

Positive Controls: U-937 cell lysate: sc-2239, human spleen extract: sc-363779 or human lung extract: sc-363767.

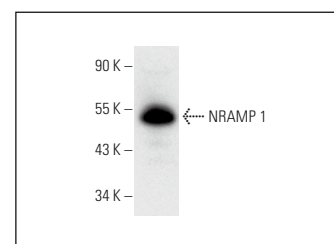
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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). 3) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



NRAMP 1 (E-2): sc-398077. Western blot analysis of NRAMP 1 expression in U-937 whole cell lysate (A) and human lung (B) and human spleen (C) tissue extracts. Detection reagent used: m-IgG κ BP-HRP: sc-533670.



NRAMP 1 (E-2): sc-398077. Western blot analysis of NRAMP 1 expression in U-937 whole cell lysate.

SELECT PRODUCT CITATIONS

- Nakajima, M., et al. 2021. Nrf2 regulates granuloma formation and macrophage activation during *Mycobacterium avium* infection via mediating NRAMP 1 and HO-1 expressions. *mBio* 12: e01947-20.

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.