

# Grim19 (C-5): sc-365045

## BACKGROUND

The Grim family of proteins appear to be novel types of tumor suppressors. Grim19, which stands for gene associated with retinoic-interferon-induced mortality 19 protein, is also designated cell death-regulatory protein Grim19 or NADH dehydrogenase ubiquinone 1  $\alpha$  subcomplex subunit 13. The Grim19 protein plays two roles within the cell. As a member of the interferon- $\beta$  and retinoic acid-induced pathway of cell death, Grim19 induces apoptosis. As part of the mitochondrial complex I, Grim19 is essential for its assembly and electron transfer activity. It transfers electrons to the respiratory chain from NADH and plays a role in the interferon/all-*trans*-retinoic acid (IFN/RA) cell death pathway. It localizes primarily to the mitochondrion, but may translocate to the nucleus upon IFN/RA treatment. Grim19 may also be useful as a biological marker or target for drug development.

## REFERENCES

1. Brzustowicz, L.M., et al. 1992. Fine-mapping of the spinal muscular atrophy locus to a region flanked by MAP1B and D5S6. *Genomics* 13: 991-998.
2. Angell, J.E., et al. 2000. Identification of Grim19, a novel cell death-regulatory gene induced by the interferon- $\beta$  and retinoic acid combination, using a genetic approach. *J. Biol. Chem.* 275: 33416-33426.
3. Zhang, J., et al. 2003. The cell death regulator Grim19 is an inhibitor of signal transducer and activator of transcription 3. *Proc. Natl. Acad. Sci. USA* 100: 9342-9347.
4. Lufe, C., et al. 2003. Grim19, a death-regulatory gene product, suppresses Stat3 activity via functional interaction. *EMBO J.* 22: 1325-1335.
5. Huang, G., et al. 2004. Grim19, a cell death regulatory protein, is essential for assembly and function of mitochondrial complex I. *Mol. Cell. Biol.* 24: 8447-8456.
6. Kalvakolanu, D.V. 2004. The Grims: a new interface between cell death regulation and interferon/retinoid induced growth suppression. *Cytokine Growth Factor Rev.* 15: 169-194.
7. Maximo, V., et al. 2005. Somatic and germline mutation in GRIM-19, a dual function gene involved in mitochondrial metabolism and cell death, is linked to mitochondrion-rich (Hurthle cell) tumours of the thyroid. *Br. J. Cancer* 92: 1892-1898.

## CHROMOSOMAL LOCATION

Genetic locus: NDUF13 (human) mapping to 19p13.11.

## SOURCE

Grim19 (C-5) is a mouse monoclonal antibody raised against amino acids 62-132 mapping near the C-terminus of Grim19 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>2b</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

Grim19 (C-5) is recommended for detection of Grim19 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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 Grim19 siRNA (h): sc-60765, Grim19 shRNA Plasmid (h): sc-60765-SH and Grim19 shRNA (h) Lentiviral Particles: sc-60765-V.

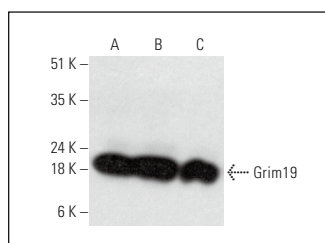
Molecular Weight of Grim19: 16 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, MCF7 whole cell lysate: sc-2206 or MDA-MB-231 cell lysate: sc-2232.

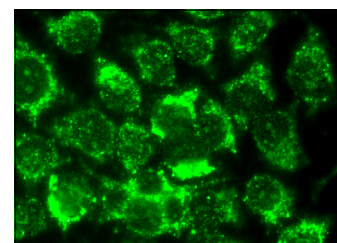
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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 $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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



Grim19 (C-5): sc-365045. Western blot analysis of Grim19 expression in HeLa (A), MCF7 (B) and MDA-MB-231 (C) whole cell lysates.



Grim19 (C-5): sc-365045. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

## SELECT PRODUCT CITATIONS

1. Zhang, W., et al. 2015. Additive effects of eukaryotic co-expression plasmid carrying Grim19 and LKB1 genes on breast cancer *in vitro* and *in vivo*. *Mol. Med.* 12: 7665-7672.
2. Li, M., et al. 2015. Enhanced antitumor effect of cisplatin in human oral squamous cell carcinoma cells by tumor suppressor GRIM-19. *Mol. Med.* 12: 8185-8192.

## STORAGE

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