

# ENDO G (C-1): sc-398683

## BACKGROUND

Endonuclease G (ENDO G), a nuclear encoded protein, localizes to the mitochondria. This sugar-nonspecific nuclease, responsible for major mitochondrial nuclease activity, preferentially cleaves single-stranded DNA(ssDNA). Synthesized as a propeptide with an amino-terminal presequence that targets the nuclease to mitochondria, ENDO G translocates to nuclei on apoptotic stimulation and act as a nuclease without sequence specificity. Both exonucleases and DNase I stimulate the ability of ENDO G to generate double-stranded DNA cleavage products at physiological ionic strengths, suggesting that these activities work in concert with ENDO G in apoptotic cells to ensure efficient DNA breakdown. In addition to deoxyribonuclease activities, ENDO G also has ribonuclease (RNase) and RNase H activities. ENDO G is capable of generating the RNA primers required by DNA polymerase  $\gamma$  to initiate replication of mitochondrial DNA. ENDO G exists in the mitochondrial intermembrane space, but not in the matrix where mtDNA replication occurs. This enzyme provides an important nicking function for mitochondrial DNA specifically cleaving DNA at GC tracts. Human ENDO G maps to chromosome 9q34.11.

## REFERENCES

1. Cote, J., et al. 1993. Primers for mitochondrial DNA replication generated by endonuclease G. *Science* 261: 765-769.
2. Tiranti, V., et al. 1995. Chromosomal localization of mitochondrial transcription factor A (TCF6), single-stranded DNA-binding protein (SSBP), and endonuclease G (ENDO G), three human housekeeping genes involved in mitochondrial biogenesis. *Genomics* 25: 559-564.
3. Widlak, P., et al. 2001. Action of recombinant human apoptotic endonuclease G on naked DNA and chromatin substrates: cooperation with exonuclease and DNase I. *J. Biol. Chem.* 276: 48404-48409.
4. Ikeda, S., et al. 2002. Mitochondrial factors modulate the activity of endonuclease G, the major nuclease of mammalian mitochondria. *J. Biochem. Mol. Biol. Biophys.* 6: 17-21.
5. Ohsato, T., et al. 2002. Mammalian mitochondrial endonuclease G. Digestion of R-loops and localization in intermembrane space. *Eur. J. Biochem.* 269: 5765-5770.

## CHROMOSOMAL LOCATION

Genetic locus: ENDO G (human) mapping to 9q34.11; Endo G (mouse) mapping to 2 B.

## SOURCE

ENDO G (C-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 59-91 near the N-terminus of ENDO G of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG $\gamma$  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-398683 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

ENDO G (C-1) is recommended for detection of ENDO G of mouse, rat and 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 ENDO G siRNA (h): sc-105330, ENDO G siRNA (m): sc-144651, ENDO G shRNA Plasmid (h): sc-105330-SH, ENDO G shRNA Plasmid (m): sc-144651-SH, ENDO G shRNA (h) Lentiviral Particles: sc-105330-V and ENDO G shRNA (m) Lentiviral Particles: sc-144651-V.

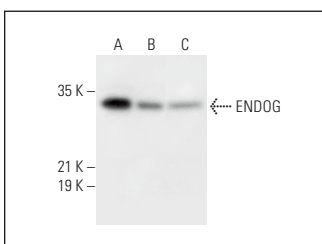
Molecular Weight of ENDO G: 33 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, U-87 MG cell lysate: sc-2411 or HUV-EC-C whole cell lysate: sc-364180.

## 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



ENDO G (C-1): sc-398683. Western blot analysis of ENDO G expression in K-562 (A), U-87 MG (B) and HUV-EC-C (C) whole cell lysates.

## 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](http://www.scbt.com) for detailed protocols and support products.