

# ENDO G (P-18): sc-26924

## 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* 5122: 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* 2: 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.* 51: 48404-48409.
4. Ohsato, T., et al. 2002. Mammalian mitochondrial endonuclease G. Digestion of R-loops and localization in intermembrane space. *Eur. J. Biochem.* 23: 5765-5770.
5. Ikeda, S., et al. 2002. Mitochondrial factors modulate the activity of endonuclease G, the major nuclease of Mammalian mitochondria. *J. Biochem. Mol. Biol. Biophys.* 1: 17-21.
6. LocusLink Report (LocusID: 2021). <http://www.ncbi.nlm.nih.gov/LocusLink/>

## CHROMOSOMAL LOCATION

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

## SOURCE

ENDO G (P-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of ENDO G 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 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-26924 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

ENDO G (P-18) is recommended for detection of Endonuclease G of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

ENDO G (P-18) is also recommended for detection of Endonuclease G in additional species, including canine, bovine and porcine.

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: U-87 MG cell lysate: sc-2411, K-562 whole cell lysate: sc-2203 or Hep G2 cell lysate: sc-2227.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## 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) or our catalog for detailed protocols and support products.