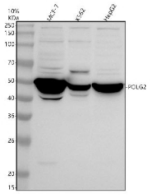
POLG2 Antibody / DNA polymerase subunit gamma-2 (FY12639)

Catalog No.	Formulation	Size
FY12639	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q9UHN1
Applications	Western Blot: 0.25-0.5ug/ml ELISA: 0.1-0.5ug/ml
Limitations	This POLG2 antibody is available for research use only.



Western blot analysis of POLG2 using anti-POLG2 antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human MCF-7 whole cell lysates, Lane 2: human K562 whole cell lysates, Lane 3: human HepG2 whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-POLG2 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A specific band was detected for POLG2 at approximately 55 kDa. The expected molecular weight of POLG2 is ~55 kDa.

Description

POLG2 antibody detects DNA polymerase subunit gamma-2, a key accessory subunit of the mitochondrial DNA polymerase complex responsible for mitochondrial genome replication and repair. POLG2 enhances the processivity and

stability of the catalytic subunit POLG, ensuring faithful replication of mitochondrial DNA (mtDNA). The POLG2 antibody is widely used in mitochondrial biology, genetics, and aging research to study DNA maintenance, oxidative stress, and mitochondrial dysfunction.

POLG2 is encoded by the POLG2 gene located on human chromosome 17q23.3. The protein is approximately 485 amino acids in length and localizes to the mitochondrial matrix. It forms a homodimer that binds to POLG, increasing its affinity for DNA and reducing dissociation during replication. Through this interaction, POLG2 coordinates mtDNA replication and repair under both physiological and stress conditions.

The POLG2 antibody detects a 55 kilodalton band by western blot and shows mitochondrial punctate staining under immunofluorescence microscopy. Loss-of-function mutations in POLG2 result in reduced mtDNA copy number, leading to multiple mitochondrial DNA deletions, oxidative stress, and mitochondrial depletion syndromes. Clinical manifestations include progressive external ophthalmoplegia, ataxia, and myopathy.

POLG2 also contributes to mitochondrial biogenesis and interacts with nucleoid proteins such as TFAM and TWINKLE, supporting DNA packaging and maintenance. Dysregulation of POLG2 expression has been observed in neurodegenerative diseases, aging tissues, and metabolic disorders, where impaired mtDNA replication leads to reduced energy output and increased reactive oxygen species production.

Because of its essential role in maintaining mitochondrial genome integrity, POLG2 serves as a critical factor in understanding mitochondrial pathophysiology and age-related dysfunction. NSJ Bioreagents provides a validated POLG2 antibody optimized for its applications, supporting research into DNA replication, repair, and mitochondrial disease mechanisms.

Application Notes

Optimal dilution of the POLG2 antibody should be determined by the researcher.

Immunogen

E.coli-derived human POLG2 recombinant protein (Position: Q29-E434) was used as the immunogen for the POLG2 antibody.

Storage

After reconstitution, the POLG2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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