

NFS1 Antibody / Cysteine desulfurase (FY13373)

Catalog No.	Formulation	Size
FY13373	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

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Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
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 Na ₂ HPO ₄ .
UniProt	Q9Y697
Applications	Western Blot : 0.25-0.5ug/ml Immunoprecipitation : 2-4ug/500ug of lysate Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This NFS1 antibody is available for research use only.

Description

NFS1 antibody detects Cysteine desulfurase, a mitochondrial enzyme encoded by the NFS1 gene on chromosome 20q11.22. NFS1 is essential for the biosynthesis of iron-sulfur (Fe-S) clusters, which serve as cofactors for a wide range of enzymes involved in electron transport, metabolic catalysis, and DNA repair. NFS1 catalyzes the conversion of L-cysteine to alanine, providing sulfur atoms for Fe-S cluster assembly within the mitochondrial matrix. This reaction represents the first committed step of Fe-S cluster formation, fundamental to mitochondrial respiration and cellular energy metabolism.

Structurally, NFS1 is a pyridoxal phosphate (PLP)-dependent enzyme that functions as a homodimer. It forms a core part of the Fe-S cluster assembly complex with ISCU (scaffold protein), ISD11, ACP (acyl carrier protein), and FXN (Fratxin). NFS1 donates sulfur from cysteine via a persulfide intermediate, which is transferred to ISCU for subsequent cluster assembly. The protein belongs to the cysteine desulfurase family, conserved across prokaryotes and eukaryotes. Co-localization studies show NFS1 residing in the mitochondrial matrix, where it coexists with other Fe-S biosynthesis factors such as ISCU and FXN.

Functionally, NFS1 supports the biogenesis of Fe-S cluster-dependent enzymes including aconitase, succinate dehydrogenase, and DNA polymerase complexes. It plays a key role in oxidative phosphorylation, the tricarboxylic acid (TCA) cycle, and cellular redox homeostasis. In addition to mitochondrial roles, NFS1 also provides sulfur for cytosolic Fe-S protein assembly via the iron-sulfur cluster export machinery. Known interaction partners include ISD11, FXN, and NUBP2, which together ensure the stability and efficiency of sulfur transfer and cluster formation.

Dysregulation or mutation of NFS1 disrupts Fe-S cluster biogenesis and results in severe mitochondrial dysfunction. Deficiency causes combined oxidative phosphorylation deficiency 20 (COXPD20), characterized by lactic acidosis, developmental delay, and myopathy. In cancer, altered NFS1 expression influences metabolic reprogramming and redox balance. Pathway associations include iron-sulfur cluster biosynthesis, oxidative phosphorylation, and mitochondrial sulfur metabolism. Expression of NFS1 is particularly high in metabolically active tissues such as heart, liver, and skeletal muscle.

Immunohistochemical staining using NFS1 antibody shows mitochondrial localization in hepatocytes, myocytes, and neurons. The NFS1 antibody from NSJ Bioreagents is a reliable reagent for research on mitochondrial biogenesis, redox regulation, and metabolic enzyme assembly.

Application Notes

Optimal dilution of the NFS1 antibody should be determined by the researcher.

Immunogen

E.coli-derived human NFS1 recombinant protein (Position: R107-L356) was used as the immunogen for the NFS1 antibody.

Storage

After reconstitution, the NFS1 antibody can be stored for up to one month at 4°C. For long-term, aliquot and store at -20°C. Avoid repeated freezing and thawing.