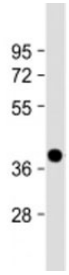
NMNAT1 Antibody (F53837)

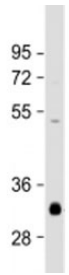
Catalog No.	Formulation	Size
F53837-0.2ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.2 ml
F53837-0.05ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.05 ml

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Predicted Reactivity	Bovine, Mouse
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity
UniProt	Q9HAN9
Applications	Western Blot : 1:1000-2000
Limitations	This NMNAT1 antibody is available for research use only.



Western blot testing of human heart lysate with NMNAT1 antibody at 1:2000. Predicted molecular weight: 32 kDa, commonly observed at 28-36 kDa.



Western blot testing of human brain lysate with NMNAT1 antibody at 1:2000. Predicted molecular weight: 32 kDa, commonly observed at 28-36 kDa.

Description

NMNAT1 antibody detects Nicotinamide mononucleotide adenylyltransferase 1, a nuclear enzyme that catalyzes a key step in the biosynthesis of nicotinamide adenine dinucleotide (NAD+), an essential coenzyme in redox metabolism and cellular signaling. The UniProt recommended name is Nicotinamide mononucleotide adenylyltransferase 1 (NMNAT1). This enzyme converts nicotinamide mononucleotide (NMN) and ATP into NAD+ and pyrophosphate, maintaining the intracellular NAD+ pool required for energy metabolism, DNA repair, and sirtuin-mediated signaling.

Functionally, NMNAT1 antibody identifies a 279-amino-acid nuclear protein that serves as the primary NAD+ synthase isoform localized in the nucleus. NMNAT1 operates in the final step of the NAD+ salvage pathway, acting as a central regulator of nuclear NAD+ availability. Through its catalytic activity, it supports numerous NAD+-dependent enzymes, including PARP1 (poly-ADP-ribose polymerase 1) and SIRT1, which govern DNA repair, chromatin remodeling, and cellular stress responses.

The NMNAT1 gene is located on chromosome 1q25.3 and encodes an enzyme with a conserved nucleotidyltransferase domain critical for substrate binding and catalysis. NMNAT1 expression is highest in metabolically active and long-lived tissues such as brain, retina, and muscle. Within the nucleus, NMNAT1 associates with DNA repair foci and chromatin, helping sustain genomic integrity during oxidative and replicative stress. It plays a pivotal role in protecting cells from genotoxic damage by supplying NAD+ for PARP-mediated repair and apoptosis regulation.

In addition to its enzymatic function, NMNAT1 exhibits neuroprotective properties. It contributes to axon survival and stress resistance independently of its catalytic activity by stabilizing neuronal proteins against misfolding and aggregation. Mutations in NMNAT1 are causative for Leber congenital amaurosis type 9 (LCA9), a severe inherited retinal dystrophy leading to early-onset blindness. These pathogenic variants disrupt NAD+ synthesis and impair photoreceptor viability, highlighting the enzyme's crucial role in retinal metabolism and maintenance.

In metabolic and aging research, NMNAT1 is recognized as a central player in NAD+ homeostasis. Its function coordinates nuclear NAD+ with mitochondrial and cytosolic pools maintained by NMNAT2 and NMNAT3. Through regulation of NAD+-dependent deacetylases and DNA repair enzymes, NMNAT1 influences gene expression, energy metabolism, and longevity-associated pathways. Decreased NMNAT1 activity has been linked to neurodegeneration, metabolic decline, and impaired DNA repair capacity in aging cells.

NMNAT1 antibody is widely used in molecular biology, neurodegeneration, and metabolism research. It is suitable for western blotting, immunohistochemistry, and immunofluorescence to detect NMNAT1 localization and expression. This antibody supports investigations into NAD+ biosynthesis, genomic stability, and neuronal maintenance. In translational research, NMNAT1 serves as a biomarker for NAD+ metabolism and retinal disease pathogenesis.

Structurally, NMNAT1 forms a hexameric assembly with three active sites per trimer, stabilized by magnesium ions that coordinate ATP binding. Its C-terminal region mediates nuclear targeting and protein-protein interactions, while catalytic residues coordinate the formation of the NMN-AMP intermediate during NAD+ synthesis. NSJ Bioreagents provides NMNAT1 antibody reagents validated for use in NAD+ metabolism, nuclear enzymology, and neuroprotective pathway research.

Application Notes

Titration of the NMNAT1 antibody may be required due to differences in protocols and substrate sensitivity.

Immunogen

A portion of amino acids 200-232 from the human protein was used as the immunogen for the NMNAT1 antibody.

Storage

Aliquot the NMNAT1 antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

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