GATM Antibody / Glycine amidinotransferase mitochondrial (FY12963)

Catalog No.	Formulation	Size
FY12963	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, 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 Na2HPO4.
UniProt	P50440
Applications	Western Blot : 0.25-0.5ug/ml Immunohistochemistry : 2-5ug/ml Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This GATM antibody is available for research use only.

Description

GATM antibody detects Glycine amidinotransferase, mitochondrial, an enzyme that catalyzes the first committed step in creatine biosynthesis. The UniProt recommended name is Glycine amidinotransferase, mitochondrial (GATM), also known as L-arginine:glycine amidinotransferase or AGAT. GATM transfers an amidino group from arginine to glycine, producing guanidinoacetate, which is subsequently methylated to creatine by GAMT. Creatine and phosphocreatine serve as rapid energy buffers in tissues with fluctuating ATP demand, including muscle and brain.

Functionally, GATM antibody identifies a 423-amino-acid mitochondrial matrix enzyme that catalyzes a reversible transamidination reaction dependent on pyridoxal phosphate (PLP) as a cofactor. This reaction provides the foundation for creatine synthesis, linking amino acid metabolism with cellular energy storage. The enzyme's activity supports energy homeostasis by ensuring adequate creatine production for high-energy phosphate transfer through the phosphocreatine system.

The GATM gene is located on chromosome 15q21.1 and encodes a homotetrameric enzyme targeted to mitochondria via

an N-terminal transit peptide. GATM is primarily expressed in kidney, pancreas, and liver, where it supplies guanidinoacetate for systemic creatine synthesis. In muscle and neural tissues, creatine generated downstream of GATM activity is phosphorylated by creatine kinase to form phosphocreatine, maintaining ATP levels during high metabolic activity. Deficiency or mutation of GATM causes creatine deficiency syndrome, characterized by neurological impairment and muscle weakness.

GATM antibody is widely used in studies of amino acid metabolism, energy homeostasis, and mitochondrial function. It is a valuable marker for assessing creatine biosynthesis and mitochondrial enzyme integrity. Reduced GATM activity is linked to metabolic and neurological disorders, while upregulation has been observed under energy stress and oxidative conditions. The enzyme's function connects arginine metabolism, urea cycle intermediates, and ATP regeneration.

Structurally, GATM consists of an active-site lysine residue forming a Schiff base with PLP, enabling catalysis of amidino transfer. The enzyme forms stable homotetramers that ensure efficient substrate channeling and regulation. GATM activity is modulated by substrate availability and feedback inhibition from creatine levels. It interacts with mitochondrial transport proteins to coordinate substrate exchange across the inner membrane. The GATM antibody supports research applications including western blotting, immunohistochemistry, and metabolic flux analysis, providing insights into energy metabolism and mitochondrial health.

NSJ Bioreagents provides GATM antibody reagents validated for use in energy metabolism, mitochondrial biology, and enzymology research.

Application Notes

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

Immunogen

E.coli-derived human GATM recombinant protein (Position: M1-E279) was used as the immunogen for the GATM antibody.

Storage

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