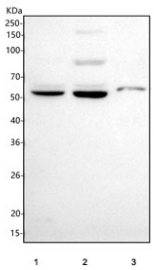
# GABA Transporter 1 Antibody / GAT-1 / SLC6A1 (RQ8735)

| Catalog No. | Formulation | Size |
|---|---|---|
| RQ8735 | 0.5mg/ml if reconstituted with 0.2ml sterile DI water | 100 ug |

**Bulk quote request**

| | |
|---|---|
| **Availability** | 1-3 days |
| **Species Reactivity** | Human, Mouse, Rat |
| **Format** | Antigen affinity purified |
| **Host** | Rabbit |
| **Clonality** | Polyclonal (rabbit origin) |
| **Isotype** | Rabbit IgG |
| **Purity** | Antigen affinity chromatography |
| **Buffer** | Lyophilized from 1X PBS with 2% Trehalose |
| **UniProt** | P30531 |
| **Applications** | Western blot: 1-2ug/ml<br>ELISA: 0.1-0.5ug/ml |
| **Limitations** | This GABA Transporter 1 antibody is available for research use only. |




Western blot testing of 1) human HeLa, 2) rat C6, and 3) mouse Neuro 2a cell lysate with SLC6A1 antibody. Predicted molecular weight is approximately 67 kDa, but SLC6A1 routinely migrates at approximately 50 to 55 kDa on SDS PAGE due to its multi pass membrane structure and glycosylation dependent mobility.

## Description

GABA Transporter 1 antibody recognizes Sodium- and chloride-dependent GABA transporter 1 (also known as GAT-1 and solute carrier family 6 member 1), the major high-affinity GABA uptake transporter encoded by the SLC6A1 gene. This transporter belongs to the solute carrier 6 neurotransmitter transporter family and is widely expressed in GABAergic interneurons, hippocampal pyramidal neurons, cerebellar granule cells, and cortical projection neurons. It is predominantly localized to the plasma membrane, where it recaptures synaptically released GABA to terminate inhibitory signaling and maintain the balance between excitation and inhibition. The SLC6A1 gene is located on human

chromosome 3p25.3, and genetic alterations have been linked to epilepsy, myoclonic-atonic seizures, developmental delay, and other neurological disorders. These variants often influence transporter folding, membrane trafficking, or stability, highlighting the importance of proper GAT-1 function for neural circuitry.

GAT-1 participates in key neuronal pathways that shape both tonic and phasic inhibition. By regulating extracellular GABA concentrations, the transporter influences cortical oscillations, neuronal firing synchrony, and overall network stability. It also interfaces with metabolic processes through the GABA shunt pathway, affecting neuronal energy balance. During development, SLC6A1 expression increases from embryonic to early postnatal stages, aligning with the maturation of inhibitory synapses and contributing to the establishment of functional neural circuits. High expression levels in the thalamus, hippocampus, and neocortex underscore its central role in brain regions that rely heavily on inhibitory control.

At the subcellular level, GAT-1 localizes primarily to presynaptic boutons and axonal membranes. It frequently co-localizes with GAD67 and synaptic vesicle proteins such as synaptophysin, reflecting its involvement in synaptically coupled GABA clearance. Transporter cycling between intracellular compartments and the plasma membrane is regulated by interacting proteins including syntaxin-1A and SNAP25, as well as neuronal activity and phosphorylation-dependent pathways. Alternative splicing of SLC6A1 generates isoform-specific differences in the C-terminal domain, which can influence subcellular trafficking patterns and surface expression. These regulatory mechanisms help determine transporter availability at inhibitory synapses and fine-tune the dynamics of GABA uptake.

Beyond classical neurotransmission, SLC6A1 activity has been implicated in broader physiological contexts, including modulation of stress responses, metabolic regulation, and selected immune-cell signaling pathways. Although these roles are more context-dependent, they highlight the potential systemic influence of GABAergic signaling in diverse tissues. Still, the transporter remains best characterized for its essential function in maintaining inhibitory tone and shaping electrical activity across neural networks.

This GABA Transporter 1 antibody is suitable for detecting SLC6A1 expression in research settings focused on inhibitory neurotransmission, synaptic development, circuit maturation, neuronal physiology, and neurological disease models involving dysregulated GABA signaling. NSJ Bioreagents provides this reagent as part of its neuroscience-focused antibody collection.

## Application Notes

Optimal dilution of the GABA Transporter 1 antibody should be determined by the researcher.

## Immunogen

An E.coli-derived human recombinant protein (amino acids A23-A215) was used as the immunogen for the GABA Transporter 1 antibody.

## Storage

After reconstitution, the GABA Transporter 1 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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