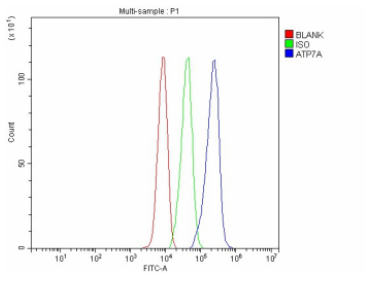
ATP7A Antibody / Copper-transporting ATPase 1 (FY12402)

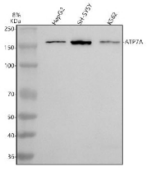
Catalog No.	Formulation	Size
FY12402	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

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	Q04656
Applications	Western Blot : 0.25-0.5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This ATP7A antibody is available for research use only.



Flow Cytometry analysis of HepG2 cells using anti-ATP7A antibody. Overlay histogram showing HepG2 cells stained with (Blue line). The cells were fixed with 4% paraformaldehyde and blocked with 10% normal goat serum. And then incubated with rabbit anti-ATP7A antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.



Western blot analysis of ATP7A using anti-ATP7A antibody. Lane 1: human HepG2 whole cell lysates, Lane 2: human SH-SY5Y whole cell lysates, Lane 3: human K562 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-ATP7A 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 enhanced chemiluminescent. The expected molecular weight of ATP7A is ~163 kDa.

Description

The ATP7A antibody targets Copper-transporting ATPase 1, a P-type ATPase encoded by the ATP7A gene that regulates intracellular copper distribution and homeostasis. Copper-transporting ATPase 1 facilitates the delivery of copper to cuproenzymes within the trans-Golgi network and mediates copper efflux from cells when intracellular levels rise. The ATP7A antibody provides a robust tool for investigating copper metabolism, metal ion transport, and disorders of copper imbalance such as Menkes disease.

Copper-transporting ATPase 1 is a multi-domain membrane protein containing ATP-binding and transmembrane copper-binding motifs that drive active ion transport using ATP hydrolysis. It localizes mainly to the trans-Golgi network under basal conditions but relocates to the plasma membrane during copper overload. The ATP7A antibody allows researchers to study this dynamic localization, revealing how cells adapt to fluctuating copper availability to maintain metal homeostasis. ATP7A activity ensures proper metallation of key enzymes such as lysyl oxidase, dopamine beta-hydroxylase, and superoxide dismutase 1.

Loss-of-function mutations in ATP7A cause Menkes disease, a lethal X-linked disorder characterized by systemic copper deficiency leading to neurodegeneration, connective tissue abnormalities, and growth retardation. The ATP7A antibody is crucial for diagnostic and mechanistic research into this condition, enabling detection of protein expression and distribution defects in patient-derived fibroblasts and tissues. Reduced expression or mislocalization of Copper-transporting ATPase 1 disrupts copper delivery to secretory enzymes, impairing multiple physiological processes.

In addition to Menkes disease, partial ATP7A dysfunction underlies occipital horn syndrome, a milder disorder affecting connective tissue and autonomic function. The ATP7A antibody supports comparative studies of these phenotypes and aids in identifying molecular defects in copper trafficking. Furthermore, ATP7A expression influences tumor progression and drug resistance, as copper transport impacts angiogenesis and the uptake of platinum-based chemotherapeutics.

The ATP7A antibody is validated for western blotting, immunohistochemistry, and immunofluorescence, showing clear perinuclear and membrane localization depending on copper conditions. NSJ Bioreagents provides this antibody as a high-quality reagent for consistent and sensitive detection in biochemical and disease research. By enabling precise analysis of Copper-transporting ATPase 1, the ATP7A antibody supports investigations into metal ion metabolism, neurodegeneration, and therapeutic modulation of copper-dependent enzymes.

Application Notes

Optimal dilution of the ATP7A antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the C-terminus of human ATP7A was used as the immunogen for the ATP7A antibody.

Storage

After reconstitution, the ATP7A antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at

-20oC. Avoid repeated freezing and thawing.