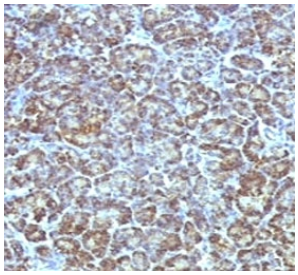
Mitochondrial Antibody [clone MTL56] (V7023)

Catalog No.	Formulation	Size
V7023-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	100 ug
V7023-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	20 ug
V7023SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug
V7023IHC-7ML	Prediluted in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide; *For IHC use only*	7 ml

Bulk quote request

Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	MTL56
Purity	Protein G affinity chromatography
Localization	Mitochondria
Applications	Immunohistochemistry (FFPE) : 1-2ug/ml for 30 min at RT (1) Prediluted IHC Only Format : incubate for 30 min at RT (2)
Limitations	This Mitochondrial antibody is available for research use only.



IHC testing of FFPE human pancreas stained with Mitochondrial antibody (MLT56). FFPE staining is enhanced by boiling tissue sections in pH 9 10mM Tris with 1mM EDTA for 10-20 min followed by cooling at RT for 20 min.

Description

Mitochondrial antibody (clone MTL56) detects mitochondrial components that define the organelleÃ¢Â€Â™s central role in cellular energy metabolism and signaling. Mitochondria are multifunctional organelles that generate ATP through oxidative phosphorylation, integrate metabolic flux, and modulate programmed cell death. Their number, size, and distribution vary according to energy demand, differentiation state, and stress exposure. Because mitochondria dynamically remodel through continuous cycles of fission and fusion, reliable immunodetection is essential for visualizing these changes and understanding how cells maintain energy balance and viability.

Mitochondria contain an outer membrane, an intermembrane space, an inner membrane folded into cristae, and a central matrix compartment. The inner membrane hosts the electron transport chain, which uses reducing equivalents from the tricarboxylic acid cycle to generate a proton gradient. ATP synthase then converts this potential energy into chemical energy. Beyond energy conversion, mitochondria support key anabolic pathways, including heme biosynthesis, amino acid interconversion, and steroid precursor formation. Their integration with calcium signaling and reactive oxygen species regulation connects metabolic activity with stress adaptation and transcriptional responses.

The antigen recognized by clone MTL56 marks mitochondrial membranes, enabling consistent visualization of organelle architecture in both proliferating and differentiated cells. Because mitochondrial organization reflects metabolic state, detection with this antibody aids in studies of nutrient sensing, redox homeostasis, and apoptosis. Structural transitions from elongated networks to fragmented units often accompany shifts in ATP demand or exposure to oxidative stress. Immunolabeling therefore provides a morphological index of mitochondrial health and turnover. In addition, clone MTL56 can assist in characterizing mitochondrial accumulation around nuclei or cytoskeletal elements, offering spatial context for cell physiology research.

Mitochondria are also central to cellular quality control. They communicate with lysosomes through mitophagy, a selective degradation pathway that removes damaged organelles. Monitoring mitochondrial content through antibody-based labeling provides a practical means to assess turnover rates and organelle renewal. Changes in mitochondrial mass and distribution serve as sensitive indicators of early stress responses in systems that model metabolic disorders, cancer, and neurodegeneration. The ability to visualize these features enhances the interpretation of biochemical or transcriptomic data that describe metabolic adaptation.

An antibody that recognizes mitochondrial structures can be used in immunohistochemistry, western blot, or other research assays to evaluate organelle organization and content. These approaches support diverse investigations into how mitochondria coordinate with other cellular compartments, including the endoplasmic reticulum and peroxisomes, to maintain overall homeostasis. Clone MTL56 provides a clear and reproducible labeling pattern suitable for correlating mitochondrial structure with functional readouts in cell-based and molecular experiments.

NSJ Bioreagents provides Mitochondrial antibody (clone MTL56) validated for use in relevant research applications supporting studies in energy metabolism, organelle communication, and cellular adaptation mechanisms.

Application Notes

Titering of the Mitochondrial antibody may be required for optimal performance.

1. The prediluted format is supplied in a dropper bottle and is optimized for use in IHC. After epitope retrieval step (if required), drip mAb solution onto the tissue section and incubate at RT for 30 min.

Immunogen

Human mitochondria were used as the immunogen for this Mitochondrial antibody.

Storage

Store the Mitochondrial antibody at 2-8oC (with azide) or aliquot and store at -20oC or colder (without azide).