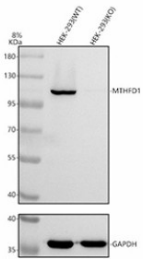
MTHFD1 Antibody / C-1-Tetrahydrofolate Synthase Polyclonal Antibody (RQ7319)

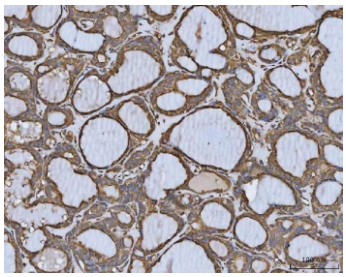
Catalog No.	Formulation	Size
RQ7319	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

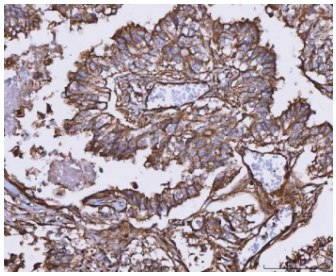
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	P11586
Localization	Cytoplasmic
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunofluorescence: 5ug/ml Flow cytometry: 1-3ug/million cells Direct ELISA: 0.1-0.5ug/ml
Limitations	This MTHFD1 Antibody / C-1-Tetrahydrofolate Synthase Polyclonal Antibody is available for research use only.



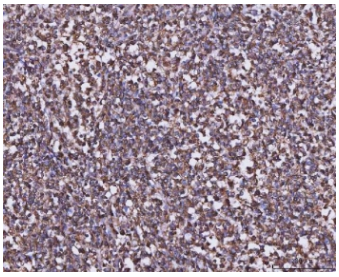
MTHFD1 Antibody WB Analysis of Wild-Type and MTHFD1 Knockout HEK293 Cells. Western blot analysis of human HEK293 wild-type (WT, lane 1) and MTHFD1 knockout (KO, lane 2) whole-cell lysates using C-1-Tetrahydrofolate Synthase Polyclonal Antibody at 0.5 ug/ml. An immunoreactive band near 102 kDa is detected in WT lysate and is absent from the KO sample, supporting MTHFD1-specific recognition. The observed molecular weight is consistent with the predicted mass of approximately 102 kDa. GAPDH serves as the loading control.



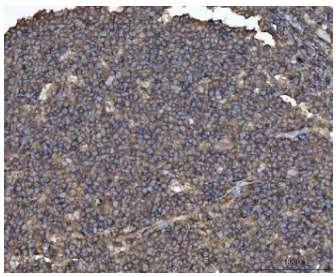
MTHFD1 Antibody IHC Staining of Human Thyroid Cancer Tissue. Immunohistochemical analysis of FFPE human thyroid cancer tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown immunoreactivity is observed in tumor-associated epithelial cells, with prominent cytoplasmic staining surrounding the follicular structures. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.



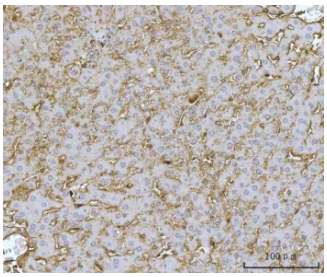
MTHFD1 Antibody IHC Staining of Human Lung Adenocarcinoma Tissue. Immunohistochemical analysis of FFPE human lung adenocarcinoma tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown immunoreactivity is observed in tumor-associated epithelial structures, with prominent cytoplasmic staining and variation among individual cells. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.



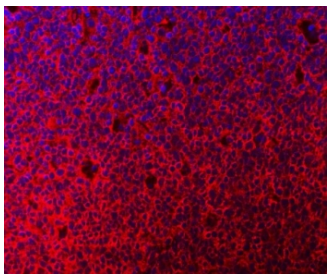
MTHFD1 Antibody IHC Staining of Human Diffuse Large B-Cell Lymphoma Tissue. Immunohistochemical analysis of FFPE human diffuse large B-cell lymphoma tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown immunoreactivity is distributed among numerous cells throughout the lymphoma tissue, with predominantly cytoplasmic staining. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.



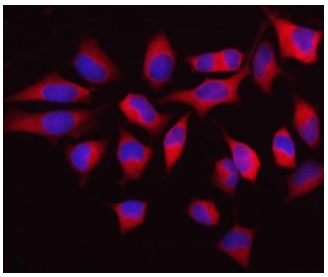
MTHFD1 Antibody IHC Staining of Human Chronic Tonsillitis Tissue. Immunohistochemical analysis of FFPE human chronic tonsillitis tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown immunoreactivity is visible in numerous lymphoid cells, with heterogeneous staining across the tissue section. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.



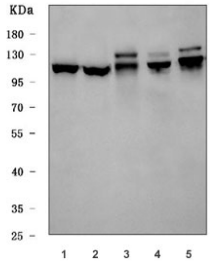
MTHFD1 Antibody IHC Staining of Rat Liver Tissue. Immunohistochemical analysis of FFPE rat liver tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown cytoplasmic immunoreactivity is observed in hepatocytes throughout the tissue section, with variation in staining intensity among individual cells. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.



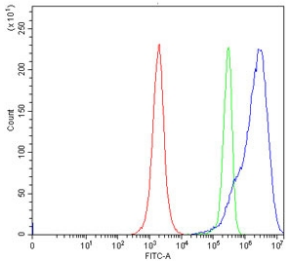
MTHFD1 Antibody IF Staining of Human Tonsil Tissue. Immunofluorescence analysis of FFPE human tonsil tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Red MTHFD1 immunoreactivity is distributed throughout the tissue, with signal surrounding numerous DAPI-stained blue nuclei. Heat-induced epitope retrieval was performed by steaming sections in pH 8 EDTA buffer for 20 minutes.



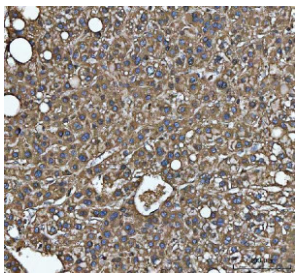
MTHFD1 Antibody IF Staining of Human HeLa Cells. Immunofluorescence analysis of FFPE human HeLa cells using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Red immunoreactivity is prominent in the cytoplasm, surrounding the blue DAPI-stained nuclei. The staining pattern is consistent with the predominantly cytosolic localization of MTHFD1. Heat-induced epitope retrieval was performed by steaming sections in pH 6 citrate buffer for 20 minutes.



MTHFD1 Antibody WB Analysis of Human HeLa and 293T Cells, Rat Brain, Mouse Brain and Mouse Kidney. Western blot analysis of human HeLa (lane 1) and 293T (lane 2) cell lysates, rat brain tissue lysate (lane 3), mouse brain tissue lysate (lane 4), and mouse kidney tissue lysate (lane 5) using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Immunoreactive bands are detected near 102 kDa across all five samples, consistent with the predicted molecular weight of MTHFD1. Additional higher-migrating bands are visible in the rat and mouse tissue samples.



MTHFD1 Antibody FACS Analysis of Human JK Cells. Flow cytometry analysis of human JK cells using C-1-Tetrahydrofolate Synthase Polyclonal Antibody at 1 ug per million cells following blocking with goat serum. The blue histogram represents antibody-stained cells, the green histogram represents the isotype control, and the red histogram represents unstained cells. The antibody-stained population exhibits a rightward fluorescence shift relative to both controls.



MTHFD1 Antibody IHC Staining of Human Liver Cancer Tissue. Immunohistochemical analysis of FFPE human liver cancer tissue using C-1-Tetrahydrofolate Synthase Polyclonal Antibody. Brown cytoplasmic immunoreactivity is observed in tumor-associated cells, with heterogeneous staining throughout the tissue section. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA buffer for 20 minutes.

Description

MTHFD1 Antibody / C-1-Tetrahydrofolate Synthase Polyclonal Antibody targets methylenetetrahydrofolate dehydrogenase 1 (MTHFD1), a cytosolic trifunctional enzyme involved in folate-dependent one-carbon metabolism. MTHFD1 catalyzes reactions that interconvert tetrahydrofolate derivatives carrying one-carbon units, providing essential intermediates for nucleotide biosynthesis and other metabolic processes. Through these activities, the enzyme helps coordinate the supply of one-carbon groups required for DNA synthesis, cellular proliferation, and maintenance of metabolic balance.

MTHFD1 possesses three distinct catalytic activities: 5,10-methylenetetrahydrofolate dehydrogenase, 5,10-methenyltetrahydrofolate cyclohydrolase, and 10-formyltetrahydrofolate synthetase. The dehydrogenase and cyclohydrolase activities reside in the N-terminal region, while the C-terminal domain carries the synthetase activity. Together, these domains enable the interconversion of folate-bound one-carbon units in different oxidation states, allowing metabolic intermediates to be directed toward specific biosynthetic requirements.

One important product of MTHFD1 activity is 10-formyltetrahydrofolate, which supplies formyl groups for de novo purine synthesis. Purine nucleotides are essential components of DNA and RNA, making this pathway particularly important in cells undergoing active proliferation. MTHFD1 also participates in the metabolic network connecting

5,10-methylenetetrahydrofolate with thymidylate synthesis. This relationship helps coordinate the availability of one-carbon units for the production of nucleotides needed during DNA replication and repair.

Folate-mediated one-carbon metabolism is closely connected to serine and glycine metabolism, the methionine cycle, and cellular methylation reactions. MTHFD1 contributes to the distribution of one-carbon units among these interconnected pathways. Its activity must be coordinated with other folate-dependent enzymes to maintain nucleotide availability and support appropriate metabolic responses to changing cellular demands. Although MTHFD1 functions predominantly in the cytosol, folate-dependent reactions also occur in mitochondria through related but distinct enzymes, including MTHFD1L.

Alterations in one-carbon metabolism have attracted considerable interest in cancer biology because proliferating cells require sustained nucleotide production. MTHFD1 expression and activity have therefore been investigated in relation to metabolic adaptation, nucleotide synthesis, and cellular growth. Genetic variation affecting MTHFD1 has also been studied in the context of folate metabolism and developmental abnormalities.

MTHFD1 Antibody supports research into the regulation of this multifunctional enzyme and its contribution to folate metabolism, nucleotide biosynthesis, and the metabolic requirements of cellular proliferation.

Explore additional antibodies targeting folate metabolism enzymes, one-carbon metabolic pathways, and proteins involved in nucleotide biosynthesis in our Metabolism Antibodies collection.

Application Notes

Optimal dilution of the MTHFD1 Antibody / C-1-Tetrahydrofolate Synthase Polyclonal Antibody should be determined by the researcher.

Immunogen

Recombinant human protein (amino acids K21-Q855) was used as the immunogen for the C-1-tetrahydrofolate synthase / MTHFD1 antibody.

Storage

After reconstitution, the C-1-tetrahydrofolate synthase / MTHFD1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

C-1-tetrahydrofolate synthase antibody, Methylenetetrahydrofolate dehydrogenase 1 antibody, Trifunctional C1-THF synthase antibody, C1-THF synthase antibody, MTHFD1 trifunctional enzyme antibody, Folate-dependent dehydrogenase antibody, Methenyltetrahydrofolate cyclohydrolase antibody, Formyltetrahydrofolate synthetase antibody, Cytosolic C1-tetrahydrofolate synthase antibody, MTHFD1 one-carbon metabolism enzyme antibody

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