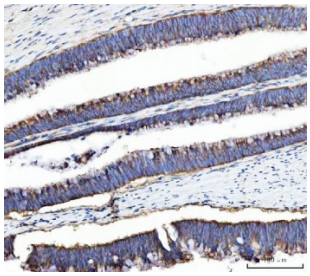
UBA5 Antibody / UBE1DC1 (RQ7530)

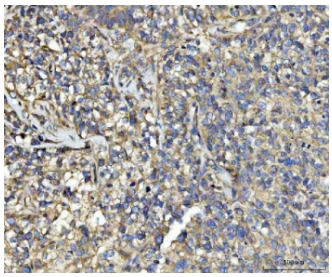
Catalog No.	Formulation	Size
RQ7530	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

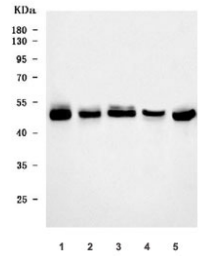
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q9GZZ9
Localization	Cytoplasmic, nuclear
Applications	Western Blot : 0.5-1ug/ml Immunohistochemistry (FFPE) : 2-5ug/ml Flow Cytometry : 1-3ug/million cells Direct ELISA : 0.1-0.5ug/ml Immunprecipitation : 2ug per 500ug of lysate
Limitations	This UBA5 antibody is available for research use only.



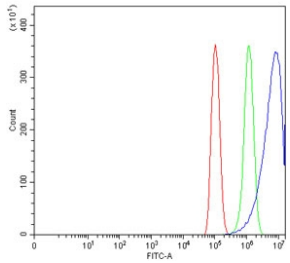
IHC staining of FFPE human colorectal adenocarcinoma tissue with UBA5 antibody.
HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



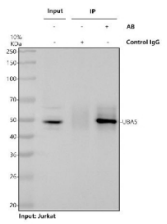
IHC staining of FFPE human breast cancer tissue with UBA5 antibody. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot testing of 1) human Caco-2, 2) human Jurkat, 3) human HeLa, 4) rat pancreas and 5) mouse pancreas tissue lysate with UBA5 antibody. Predicted molecular weight ~45 kDa, commonly observed at 40-50 kDa.



Flow cytometry testing of human PC-3 cells with UBA5 antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= UBA5 antibody.



Immunoprecipitation of UBA5 protein from 500ug of human Jurkat whole cell lysate with 2ug of UBA5 antibody.

Description

UBA5 antibody targets Ubiquitin-like modifier activating enzyme 5, also known as UBE1DC1, encoded by the UBA5 gene. UBA5 is a cytoplasmic enzyme that functions as the E1 activating enzyme for the ubiquitin-fold modifier 1 (UFM1) conjugation system. Unlike the canonical ubiquitin pathway, the UFM1 system represents a specialized post-translational modification cascade that regulates protein stability, stress responses, and organelle homeostasis. UBA5 initiates this pathway by activating UFM1 in an ATP-dependent manner, enabling its subsequent transfer through downstream conjugation enzymes.

Functionally, UBA5 catalyzes the first and essential step of UFMylation, forming a high-energy thioester bond with UFM1 before passing it to the E2 enzyme UFC1. This process allows UFM1 to be covalently attached to specific substrate proteins, influencing their localization, interactions, or functional activity. The UFM1 system has been closely linked to endoplasmic reticulum homeostasis, regulation of protein folding capacity, and cellular adaptation to stress. A UBA5 antibody supports studies focused on ubiquitin-like modification pathways and cellular stress regulation.

UBA5 is broadly expressed across tissues, reflecting the fundamental role of UFMylation in maintaining cellular function. Expression is particularly relevant in metabolically active and secretory cells, where protein quality control and ER function are critical. UBA5 operates in concert with other UFM1 pathway components, including UFC1 and UFL1, forming

a tightly regulated modification system that responds dynamically to changes in cellular environment and stress conditions.

From a disease-relevance perspective, altered UBA5 function has been associated with developmental disorders and neurodevelopmental disease. Pathogenic variants in UBA5 have been linked to early-onset encephalopathy and severe neurological phenotypes, underscoring the importance of UFMylation in nervous system development and cellular viability. Dysregulation of the UFM1 pathway has also been investigated in cancer biology and stress-related pathologies, where disruption of protein homeostasis can contribute to disease progression.

At the molecular level, UBA5 contains conserved catalytic motifs required for adenylation and thioester bond formation with UFM1. Its activity and interactions can be influenced by post-translational modifications and cellular stress state, which may affect electrophoretic behavior on SDS-PAGE without implying changes in primary sequence. A UBA5 antibody supports research applications focused on ubiquitin-like protein activation, ER stress biology, and disease-associated alterations in protein modification pathways, with NSJ Bioreagents providing reagents intended for research use.

Application Notes

Optimal dilution of the UBA5 antibody should be determined by the researcher.

Immunogen

E. coli-derived recombinant human protein (amino acids R37-D389) was used as the immunogen for the UBA5 antibody.

Storage

After reconstitution, the UBA5 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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