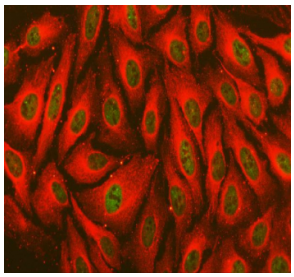
TORC1 Antibody / CRTC1 (RQ5571)

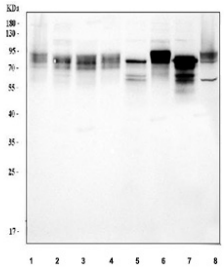
Catalog No.	Formulation	Size
RQ5571	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

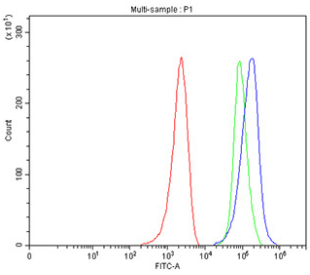
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q6UUV9
Localization	Nuclear, cytoplasmic
Applications	Western Blot : 0.5-1ug/ml Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This TORC1 antibody is available for research use only.



Immunofluorescent staining of FFPE human U-2 OS cells with TORC1 antibody (green) and Alpha Tubulin mAb (red). HIER: steam section in pH6 citrate buffer for 20 min.



Western blot testing of 1) human 293T, 2) human MCF7, 3) human HepG2, 4) human U-251, 5) rat brain, 6) rat C6, 7) mouse brain and 8) mouse Neuro-2a cell lysate with TORC1 antibody. A prominent band at ~80 kDa was detected in human cell lines, representing the highly phosphorylated form of CRTC1. Rat and mouse brain lysates displayed a characteristic 60â€“65 kDa doublet, and Neuro-2a cells showed a ~60 kDa band, consistent with dephosphorylated neuronal TORC1 isoforms reported in the literature. The slight upward shift relative to the predicted 67 kDa reflects known phosphorylation-dependent mobility changes of TORC1/CRTC1.



Flow cytometry testing of fixed and permeabilized human MCF7 cells with TORC1 antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= TORC1 antibody.

Description

TORC1 antibody is a valuable reagent for studying transcriptional regulation, neuronal plasticity, and metabolic control. The encoded protein, CRTC1 (CREB-regulated transcription coactivator 1), functions as a coactivator of CREB, the cAMP response element-binding protein. CRTC1 enhances CREB-dependent transcription by translocating to the nucleus in response to calcium and cAMP signaling. Once in the nucleus, it binds CREB at promoter regions, amplifying the expression of target genes involved in glucose metabolism, neuronal survival, and adaptive responses to stimuli.

CRTC1 is highly expressed in the brain, particularly in regions associated with learning and memory. Through its role as a CREB coactivator, TORC1 supports long-term potentiation and synaptic plasticity, processes essential for memory formation. Dysregulation of CRTC1 has been linked to neurodegenerative and psychiatric disorders, including Alzheimer disease, depression, and mood-related conditions, where impaired CREB-dependent transcription contributes to pathology.

Beyond the nervous system, CRTC1 influences metabolic pathways. It regulates gluconeogenic gene expression in the liver, thereby contributing to glucose homeostasis. By integrating signals from cAMP and calcium pathways, TORC1 coordinates cellular responses to nutritional and hormonal cues. Dysregulated CRTC1 activity has been implicated in metabolic disorders such as diabetes and obesity, making it an important target of interest in endocrinology and metabolism research.

At the molecular level, CRTC1 activity is tightly controlled by phosphorylation and cytoplasmic sequestration. Under resting conditions, TORC1 is phosphorylated and retained in the cytoplasm. Upon activation by signaling pathways, it becomes dephosphorylated and translocates into the nucleus, where it associates with CREB to enhance transcription. This regulatory cycle ensures precise control of CREB target gene expression in response to extracellular stimuli.

The TORC1 antibody is commonly used in western blotting, immunohistochemistry, immunofluorescence, and flow cytometry to measure expression levels, nuclear translocation, and disease-associated changes. These applications are valuable for research in neuroscience, metabolism, and signal transduction. For investigators exploring CREB signaling, neuronal adaptation, or metabolic regulation, the TORC1 antibody offers a dependable detection tool. NSJ Bioreagents provides validated antibodies designed to ensure reproducibility and accuracy in advanced molecular studies.

Application Notes

Optimal dilution of the TORC1 antibody should be determined by the researcher.

Immunogen

A human recombinant protein (amino acids E30-E568) was used as the immunogen for the TORC1 antibody.

Storage

After reconstitution, the TORC1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.