

# Phospho-Tuberin (Ser939) Antibody / TSC2 [clone 32T70] (FY12943)

Catalog No.	Formulation	Size
FY12943	Rabbit IgG in phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol, 0.4-0.5mg/ml BSA	100 ul

## Recombinant RABBIT MONOCLONAL

## **Bulk quote request**

Availability	2-3 weeks
Species Reactivity	Human, Mouse, Rat
Format	Liquid
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	32T70
Purity	Affinity-chromatography
Buffer	Rabbit IgG in phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol, 0.4-0.5mg/ml BSA.
UniProt	P49815
Applications	Western Blot : 1:500-1:2000 Immunohistochemistry : 1:50-1:200
Limitations	This Phospho-Tuberin (Ser939) antibody is available for research use only.

## Description

Phospho-Tuberin (Ser939) antibody detects the phosphorylated form of Tuberin, encoded by the TSC2 gene. Tuberin is a large cytoplasmic protein that forms a functional complex with Hamartin, encoded by TSC1, to regulate cell growth, proliferation, and survival. The TSC1 TSC2 complex acts as a GTPase activating protein for the small GTPase Rheb, thereby negatively regulating the mTORC1 pathway. Phosphorylation of Tuberin at serine 939 modulates its function and localization, making Phospho-Tuberin (Ser939) antibody a critical reagent for studying mTOR pathway regulation and its role in disease.

Tuberin integrates upstream signals from growth factors, nutrients, and energy status. Akt phosphorylates Tuberin at multiple residues including serine 939, leading to inhibition of the TSC1 TSC2 complex and activation of mTORC1. Research using Phospho-Tuberin (Ser939) antibody has shown that phosphorylation reduces the ability of Tuberin to suppress Rheb, resulting in increased protein synthesis and cell growth. This post translational modification thus acts as a switch between anabolic and catabolic states, linking extracellular signals to metabolic control.

Mutations in TSC2 cause Tuberous sclerosis complex, a genetic disorder characterized by benign tumor formation in multiple organs, epilepsy, and cognitive impairment. While disease is typically associated with truncating mutations, dysregulation of phosphorylation also impacts Tuberin activity. Studies with Phospho-Tuberin (Ser939) antibody have demonstrated that aberrant Akt signaling leads to hyperphosphorylation, promoting uncontrolled mTORC1 activation and contributing to tumorigenesis. This has made the TSC1 TSC2 pathway a target for therapies such as mTOR inhibitors, which are now widely used in clinical management of Tuberous sclerosis complex and related conditions.

Beyond inherited disease, phosphorylation of Tuberin has implications in sporadic cancers, metabolic syndromes, and neurodevelopmental disorders. Overactive Akt driven phosphorylation at serine 939 contributes to tumor growth and survival in breast cancer, prostate cancer, and glioblastoma. Research using Phospho-Tuberin (Ser939) antibody allows detection of these changes, providing a biomarker for pathway activation. In metabolic disease, altered mTOR regulation contributes to insulin resistance and type 2 diabetes, further expanding the relevance of Tuberin phosphorylation in human health.

Phospho-Tuberin (Ser939) antibody is applied in western blotting, immunohistochemistry, and immunofluorescence. Western blotting distinguishes phosphorylated from non phosphorylated protein, providing a measure of pathway activity. Immunohistochemistry highlights tissue specific distribution of phosphorylated Tuberin in disease samples, while immunofluorescence visualizes subcellular localization changes after growth factor stimulation. Together, these approaches help define how Tuberin phosphorylation controls mTORC1 signaling in diverse cellular contexts.

By supplying Phospho-Tuberin (Ser939) antibody, NSJ Bioreagents supports research into mTOR signaling, tumor biology, and genetic disease. This antibody provides a sensitive means of detecting phosphorylation events that are central to growth regulation and pathogenesis.

## **Application Notes**

Optimal dilution of the Phospho-Tuberin (Ser939) antibody should be determined by the researcher.

#### **Immunogen**

A synthesized peptide derived from human Phospho-Tuberin (S939) was used as the immunogen for the Phospho-Tuberin (Ser939) antibody.

#### **Storage**

Store the Phospho-Tuberin (Ser939) antibody at -20oC.