

# **OXSR1 Antibody / Oxidative stress-responsive kinase 1 (FY13321)**

Catalog No.	Formulation	Size
FY13321	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

### **Bulk quote request**

Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	O95747
Applications	ELISA: 0.1-0.5ug/ml Flow Cytometry: 1-3ug/million cells Immunoprecipitation: 2-4ug/500ug of lysate Western Blot: 0.25-0.5ug/ml
Limitations	This OXSR1 antibody is available for research use only.

## **Description**

OXSR1 antibody detects Oxidative stress-responsive kinase 1, a cytoplasmic and membrane-associated serine/threonine kinase encoded by the OXSR1 gene on chromosome 3p22.2. OXSR1 is a member of the STE20/GC kinase family and regulates ion transport, cytoskeletal organization, and osmotic stress responses. Acting as a stress-activated kinase, OXSR1 phosphorylates cation-chloride cotransporters and cytoskeletal proteins to maintain cell volume and ionic balance during oxidative stress and osmotic challenges.

Activation of OXSR1 occurs via upstream WNK1 and WNK4 kinases, which phosphorylate conserved threonine residues in its activation loop. Once active, OXSR1 phosphorylates ion transporters such as NKCC1, NKCC2, and KCC isoforms, adjusting intracellular chloride and potassium levels to sustain homeostasis. This function is vital for epithelial transport, neuronal excitability, and vascular smooth muscle contraction. OXSR1 also interacts with Rho GTPases and actin-regulating proteins to influence cytoskeletal remodeling and cell migration.

In addition to regulating ion gradients, OXSR1 participates in oxidative stress signaling, where it responds to reactive oxygen species by activating protective phosphorylation cascades. It has been shown to influence MAPK and NF-kappaB

signaling pathways that mediate inflammatory responses. Through these mechanisms, OXSR1 coordinates cellular adaptation to stress conditions and maintains barrier function in epithelial and endothelial tissues. Its dual localization in the cytoplasm and at the cell membrane enables cross-talk between ion transport and signal transduction networks.

Dysregulation of OXSR1 contributes to disorders involving electrolyte imbalance, such as hypertension, epilepsy, and kidney disease. Mutations or abnormal activity within the WNK-OSR1-SPAK pathway can lead to altered sodium and chloride transport, impacting blood pressure regulation and renal function. Elevated OXSR1 signaling has also been linked to tumor progression and metastasis, where it promotes cell motility and invasion.

Structurally, OXSR1 comprises an N-terminal kinase domain, an autoinhibitory C-terminal region, and several docking motifs that enable interactions with transporters and adaptor proteins. It shares significant homology with SPAK (STK39), its paralog in the same kinase family, and together they form a key branch of the WNK signaling pathway. OXSR1Â's activity integrates into the MAPK and ion transport pathways, bridging metabolic and environmental stress responses.

Immunohistochemical staining using OXSR1 antibody reveals cytoplasmic and plasma membrane localization in kidney, brain, and vascular smooth muscle tissues. OXSR1 antibody from NSJ Bioreagents is a reliable tool for investigating WNK-SPAK-OSR1 pathway regulation, oxidative stress adaptation, and epithelial transport mechanisms.

#### **Application Notes**

Optimal dilution of the OXSR1 antibody should be determined by the researcher.

#### **Immunogen**

E.coli-derived human OXSR1 recombinant protein (Position: K351-S527) was used as the immunogen for the OXSR1 antibody.

## **Storage**

After reconstitution, the OXSR1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.