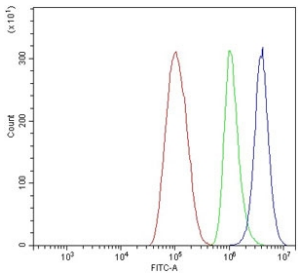
BMPR2 Antibody / Bone Morphogenetic Protein Receptor 2 (RQ6453)

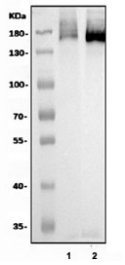
Catalog No.	Formulation	Size
RQ6453	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q13873
Applications	Western Blot : 0.5-1ug/ml Flow Cytometry : 1-3ug/million cells Direct ELISA : 0.1-0.5ug/ml
Limitations	This BMPR2 antibody is available for research use only.



Flow cytometry testing of human ThP-1 cells with BMPR2 antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= BMPR2 antibody.



Western blot analysis of BMPR2 in 1) rat heart and 2) mouse heart tissue lysate using a BMPR2 antibody. Banding is detected between approximately 170 and 190 kDa in both species. Although the theoretical mass of the BMPR2 core protein is about 115 kDa, extensive N linked glycosylation and the presence of dimeric or higher order receptor complexes can cause BMPR2 to migrate at higher apparent molecular weights in heart tissue.

Description

BMPR2 antibody detects Bone Morphogenetic Protein Receptor Type 2, a serine-threonine kinase receptor that plays a fundamental role in interpreting Bone Morphogenetic Protein signals across diverse biological systems. The UniProt recommended name is Bone morphogenetic protein receptor type 2. BMPR2 belongs to the TGF beta receptor superfamily and is central to transmitting signals that guide cell differentiation, tissue architecture, and morphogenic patterning throughout development and adult homeostasis. Its activity influences transcriptional networks that govern proliferation, matrix regulation, migration, and lineage commitment.

BMPR2 is composed of three major structural regions: an extracellular ligand binding domain that recognizes multiple BMP family ligands, a single-pass transmembrane segment, and a cytoplasmic serine-threonine kinase domain responsible for initiating downstream signaling. BMPR2 functions by forming complexes with type I BMP receptors. Once assembled, these complexes activate canonical SMAD pathways as well as non SMAD signaling circuits. This combination of signaling routes contributes to the wide range of physiological processes influenced by BMPR2, including tissue morphogenesis, vascular maintenance, immune modulation, and metabolic regulation.

The BMPR2 gene is located on chromosome 2q33 and displays broad expression across endothelial cells, vascular smooth muscle, osteoblasts, chondrocytes, lung epithelium, neuronal tissues, adipocytes, and reproductive organs. Expression patterns shift throughout development, reflecting the receptor's varied roles in early embryonic specification and adult tissue homeostasis. In endothelial cells, BMPR2 supports vascular quiescence and structural stability, helping maintain the integrity of blood vessels in response to oxygen tension, shear stress, and growth cues. In smooth muscle, BMPR2 signaling influences contractility, differentiation, and controlled remodeling.

In skeletal biology, BMPR2 participates in osteoblast maturation, chondrocyte differentiation, and cartilage patterning. BMP signals transmitted through BMPR2 help determine bone density, matrix deposition, and the coordination of cell populations that support growth plate dynamics. In the nervous system, BMPR2 contributes to axon guidance, synaptic refinement, and glial support functions. Roles in metabolic tissues are increasingly recognized, including contributions to adipocyte development, energy balance, and endocrine regulation.

During embryonic development, BMPR2 is essential for the formation of major body structures. BMP gradients interpreted through BMPR2 control dorsal-ventral patterning, limb outgrowth, cardiac morphogenesis, neural tube shaping, and craniofacial development. Disruptions in BMPR2 activity can impair organ formation or alter patterning signals that define structural boundaries across developing tissues.

In adult physiology, BMPR2 remains a key regulator of tissue remodeling, vascular health, immune environment, and regenerative capacity. BMPR2 signaling helps maintain endothelial barrier integrity, influences smooth muscle homeostasis, and contributes to adaptive remodeling after injury. In immune regulation, BMP signals can shape antigen presenting cell function, modulate T cell differentiation, and influence stromal-immune interactions that guide long term inflammatory states. In metabolic contexts, BMPR2 participates in adipocyte biology and energy regulation pathways.

BMPR2 is most widely recognized for its involvement in pulmonary vascular biology. Reduced BMPR2 signaling, due to mutations or regulatory imbalances, is strongly associated with inherited and idiopathic pulmonary arterial hypertension. Impaired receptor function may contribute to excessive smooth muscle proliferation, altered endothelial repair, and progressive remodeling of pulmonary vessels. These pathogenic mechanisms have made BMPR2 a central research target in pulmonary vascular disease, with ongoing efforts exploring how restoration or modulation of BMP signaling might improve clinical outcomes.

Beyond vascular disease, BMPR2 dysregulation contributes to several developmental disorders, skeletal abnormalities, and metabolic disturbances. Altered BMP signaling through BMPR2 has been reported in conditions involving abnormal bone density, cartilage formation, or angiogenic balance. In tumor biology, BMPR2 can influence differentiation state, invasive potential, and stromal remodeling, depending on the cancer type and microenvironmental context.

BMPR2 antibody supports research in BMP pathway biology, vascular science, skeletal development, stem cell differentiation, and regenerative signaling. It is used to examine BMPR2 expression patterns, receptor abundance under different experimental conditions, and broader changes in BMP signaling states. This antibody is validated for use in relevant research applications to detect Bone Morphogenetic Protein Receptor Type 2 expression in cells and tissues. NSJ Bioreagents provides BMPR2 antibody reagents suitable for developmental biology, vascular research, skeletal science, and studies exploring TGF beta superfamily signaling.

Application Notes

Optimal dilution of the BMPR2 antibody should be determined by the researcher.

Immunogen

Recombinant human protein (amino acids Q28-L1038) was used as the immunogen for the BMPR2 antibody.

Storage

After reconstitution, the BMPR2 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.