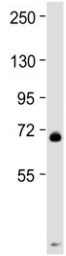
MPL Antibody / Thrombopoietin Receptor (C-Terminal Region) (F54183)

Catalog No.	Formulation	Size
F54183-0.2ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.2 ml
F54183-0.05ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.05 ml

Bulk quote request

Species Reactivity	Mouse
Predicted Reactivity	Human
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity
UniProt	P40238
RRID	AB_3757226
Applications	WB: 1:1000-1:2000
Limitations	This MPL antibody is available for research use only.



Western blot testing of mouse spleen tissue lysate with MPL antibody at 1:2000. Predicted molecular weight ~71 kDa.

Description

MPL antibody detects Myeloproliferative leukemia protein, also called Thrombopoietin receptor, a type I transmembrane glycoprotein that mediates the biological effects of thrombopoietin (TPO), the primary hormone responsible for megakaryocyte differentiation and platelet production. The UniProt recommended name is Thrombopoietin receptor (MPL). This receptor belongs to the hematopoietic growth factor receptor family and plays a central role in hematopoietic stem cell maintenance and thrombopoiesis.

Functionally, MPL antibody identifies a 635-amino-acid receptor protein composed of an extracellular cytokine-binding domain, a single transmembrane helix, and a cytoplasmic signaling tail. Upon binding thrombopoietin, MPL undergoes conformational activation and recruits Janus kinases (JAK2 and TYK2), leading to phosphorylation and activation of STAT, MAPK, and PI3K signaling pathways. These cascades promote megakaryocyte maturation, platelet formation, and progenitor cell survival.

The MPL gene is located on chromosome 1p34.2 and is expressed predominantly in hematopoietic stem cells, megakaryocytes, platelets, and bone marrow endothelial cells. MPL is also found in fetal liver and spleen during embryonic development, reflecting its critical function in early hematopoiesis. Its expression and activity are tightly regulated to maintain steady-state platelet levels while preventing excessive proliferation of megakaryocytic precursors.

In the bone marrow, thrombopoietin-MPL signaling ensures the balance between stem cell quiescence and self-renewal. MPL-deficient models exhibit severe thrombocytopenia, decreased megakaryocyte numbers, and reduced long-term hematopoietic stem cell activity. Conversely, constitutive activation of MPL signaling results in uncontrolled cell growth, contributing to myeloproliferative disorders such as essential thrombocythemia and primary myelofibrosis.

Clinically, mutations in MPL are associated with a spectrum of hematologic diseases. The W515L and W515K mutations in the juxtamembrane domain lead to constitutive activation of JAK-STAT signaling, driving cytokine-independent proliferation and abnormal megakaryopoiesis. Loss-of-function mutations cause congenital amegakaryocytic thrombocytopenia (CAMT), a severe inherited disorder characterized by absent platelet production and progression to bone marrow failure. Monitoring MPL expression and mutation status is therefore essential for diagnosing and stratifying hematologic malignancies.

Beyond platelet biology, MPL signaling influences vascular integrity and immune regulation. Recent studies suggest roles in endothelial cell homeostasis and stromal-hematopoietic cross-talk within the bone marrow niche. MPL activation also affects erythroid and myeloid progenitor differentiation, highlighting its broad regulatory influence in hematopoiesis.

MPL antibody is widely used in hematology, stem cell biology, and oncology research. It is suitable for detecting Thrombopoietin receptor expression in hematopoietic and stromal cells. This antibody supports investigations into cytokine signaling, megakaryocyte development, and hematopoietic stem cell regulation. In translational research, MPL detection is applied to characterize myeloproliferative neoplasms and evaluate therapeutic targeting of the TPO-JAK2 pathway.

Structurally, MPL features two extracellular fibronectin type III domains forming the cytokine-binding homology region, which interacts with thrombopoietin. The cytoplasmic tail contains conserved motifs that recruit and activate JAK kinases, transmitting signals that regulate gene transcription and cytoskeletal organization. NSJ Bioreagents provides MPL antibody reagents validated for use in cytokine receptor signaling, hematopoiesis, and platelet biogenesis research.

Application Notes

The stated application concentrations are suggested starting points. Titration of the MPL antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A portion of amino acids 514-546 from human MPL was used as the immunogen for the MPL antibody.

Storage

Aliquot the MPL antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

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