10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

JAK2 Antibody

Catalog # ASC11889

Product Information

Application	WB, E, IHC-P
Primary Accession	O60674
Other Accession	NP_004963, 4826776
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	130674
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	JAK2 antibody can be used for detection of JAK2 by Western blot at 1 - 2 g/ml. Antibody can also be used for immunohistochemistry starting at 5 g/mL.

Additional Information

Gene ID	3717
Other Names	Tyrosine-protein kinase JAK2, 2.7.10.2, Janus kinase 2, JAK-2, JAK2
Target/Specificity	JAK2; JAK2 antibody is human, mouse and rat reactive. JAK2 antibody is predicted to not cross-react with other members of the JAK family of proteins.
Reconstitution & Storage	JAK2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	JAK2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	JAK2 (HGNC:6192)
Function	Non-membrane spanning protein tyrosine kinase that phosphorylates type I receptors such as growth hormone (GHR), prolactin (PRLR), leptin (LEPR), erythropoietin (EPOR), thrombopoietin receptor (MPL/TPOR); or type II receptors including IFN-alpha, IFN-beta, IFN- gamma and multiple interleukins (PubMed:15690087, PubMed:15899890, PubMed:7615558, PubMed:9188471, PubMed:9657743). Functionally, plays a pivotal role in signal transduction and is involved in various processes such as cell growth, development, differentiation or histone modifications. Mediates essential signaling events in both innate and adaptive immunity. Mechanistically, following ligand-binding to cell surface receptors, phosphorylates specific tyrosine residues on the cytoplasmic tails of the receptor, creating docking

	sites for STATs proteins (PubMed:15690087, PubMed:9618263). Subsequently, phosphorylates the STATs proteins once they are recruited to the receptor. Phosphorylated STATs then form homodimer or heterodimers and translocate to the nucleus to activate gene transcription. For example, cell stimulation with erythropoietin (EPO) during erythropoiesis leads to JAK2 autophosphorylation, activation, and its association with erythropoietin receptor (EPOR) that becomes phosphorylated in its cytoplasmic domain (PubMed:9657743). Then, STAT5 (STAT5A or STAT5B) is recruited, phosphorylated and activated by JAK2. Once activated, dimerized STAT5 translocates into the nucleus and promotes the transcription of several essential genes involved in the modulation of erythropoiesis. Part of a signaling cascade that is activated by increased cellular retinol and that leads to the activation of STAT5 (STAT5A or STAT5B) (PubMed:21368206). In addition, JAK2 mediates angiotensin-2-induced ARHGEF1 phosphorylation (PubMed:20098430). Plays a role in cell cycle by phosphorylating CDKN1B (PubMed:21423214). Cooperates with TEC through reciprocal phosphorylation to mediate cytokine-driven activation of FOS transcription. In the nucleus, plays a key role in chromatin by specifically mediating phosphorylation of 'Tyr-41' of histone H3 (H3Y41ph), a specific tag that promotes exclusion of CBX5 (HP1 alpha) from chromatin (PubMed:19783980). Up- regulates the potassium voltage-gated channel activity of KCNA3 (PubMed:25644777). Binding of CNTF or the CLCF1/CLF heterodimer to CNTFR leads to IL6ST/gp130-LIFR dimerization followed by activation of JAK1 and JAK2 which in turns phosphorylate IL6ST/gp130 and LIFR (PubMed:11294841). The tyrosine phosphorylated signaling receptors serve in turn as docking proteins for STAT3 (PubMed:11294841). Involved in the oncostatin-M-mediated signaling pathway through both type I OSM receptor complex (heterodimers composed of LIFR and IL6ST) and type II OSM receptor complex (heterodimers composed of OSMR and IL6ST) (PubMed:9188471).
Cellular Location	Endomembrane system; Peripheral membrane protein. Cytoplasm. Nucleus
Tissue Location	Ubiquitously expressed throughout most tissues.

Background

JAK2 is a member of the JAK family of kinases that also include JAK1, JAK3, and TYK2 (1,2). JAK kinases are activated following tyrosine phosphorylation of cytokine receptors after ligand binding. JAK2 activation promotes the recruitment and phosphorylation of STAT3 and STAT5. These transcription factors then translocate to the nucleus where they bind specific DNA promoter sequences resulting in the transcription of genes that regulate cell proliferation, differentiation, and apoptosis (3). Mice with a disrupted JAK2 gene exhibit embryonic lethality associated with the absence of definitive erythropoiesis (4).

References

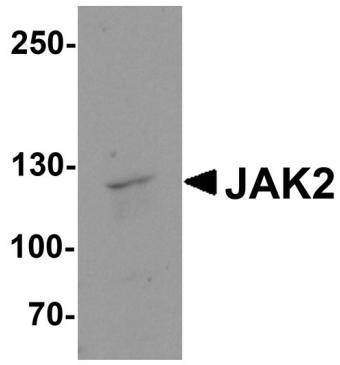
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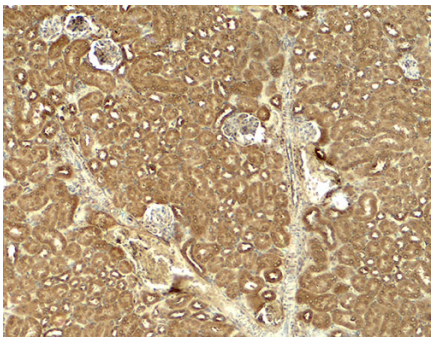
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Neubauer H, Cumano A, Muller M, et al. Jak2 deficiency defines an essential developmental checkpoint in definitive hematopoiesis. Cell 1998; 93:397-409.

Images



Western blot analysis of JAK2 in HeLa cell lysate with JAK2 antibody at 1 µg/ml.



Immunohistochemistry of JAK2 in mouse kidney tissue with JAK2 antibody at 5 µg/ml.

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