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JAK2 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO2012a

Product Information

Application	WB, IHC, FC, E
Primary Accession	O60674
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	5C12C9
Isotype	IgG1
Calculated MW	130674
Description	This gene product is a protein tyrosine kinase involved in a specific subset of cytokine receptor signaling pathways. It has been found to be constituitively associated with the prolactin receptor and is required for responses to gamma interferon. Mice that do not express an active protein for this gene exhibit embryonic lethality associated with the absence of definitive erythropoiesis.
Immunogen	Purified recombinant fragment of human JAK2 (AA: 745-955) expressed in E. Coli.
Formulation	Purified antibody in PBS with 0.05% sodium azide

Additional Information

Gene ID	3717
Other Names	Tyrosine-protein kinase JAK2, 2.7.10.2, Janus kinase 2, JAK-2, JAK2
Dilution	WB~~1/500 - 1/2000 IHC~~1/200 - 1/1000 FC~~1/200 - 1/400 E~~1/10000
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
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.

References

Blood. 2014 May 1;123(18):2826-37.PLoS One. 2013 May 24;8(5):e64628.

Images

Figure 1: Western blot analysis using JAK2 mAb against human JAK2(AA: 745-955) recombinant protein. (Expected MW is 27.1 kDa)

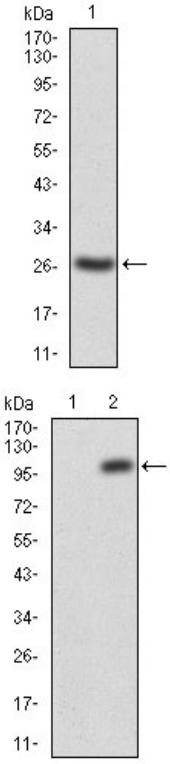


Figure 2: Western blot analysis using JAK2 mAb against HEK293 (1) and JAK2(AA: 545-1124)-hIgGFc transfected HEK293 (2) cell lysate.

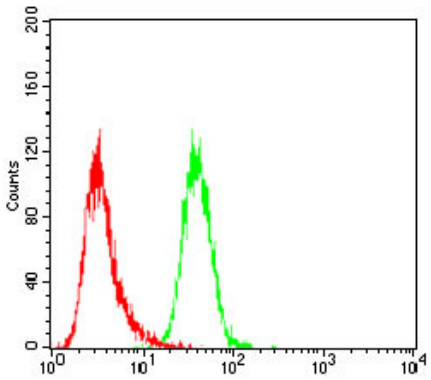


Figure 3: Flow cytometric analysis of Hela cells using JAK2 mouse mAb (green) and negative control (red).

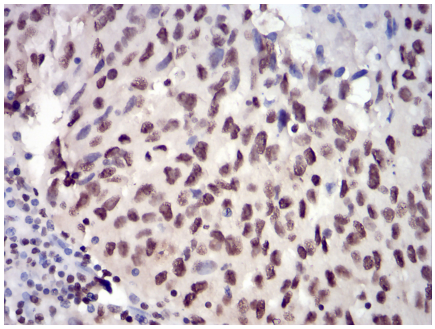


Figure 4: Immunohistochemical analysis of paraffin-embedded ovarian cancer tissues using JAK2 mouse mAb with DAB staining.

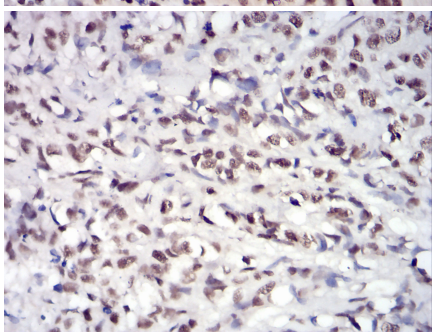


Figure 5: Immunohistochemical analysis of paraffin-embedded breast cancer tissues using JAK2 mouse mAb with DAB staining.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.