

<http://www.uniprot.org/citations/15899890> target="_blank">15899890). 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).

Cellular Location

Endomembrane system; Peripheral membrane protein. Cytoplasm. Nucleus

Tissue Location

Ubiquitously expressed throughout most tissues.

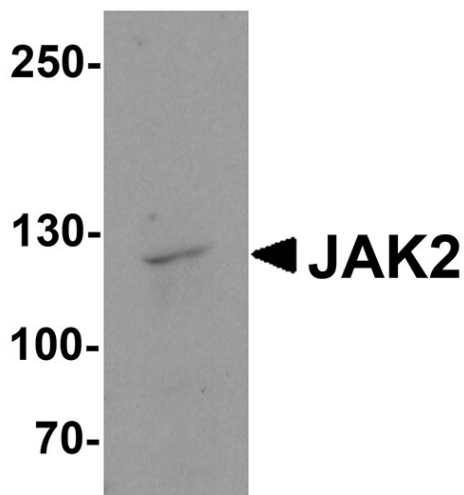
JAK2 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

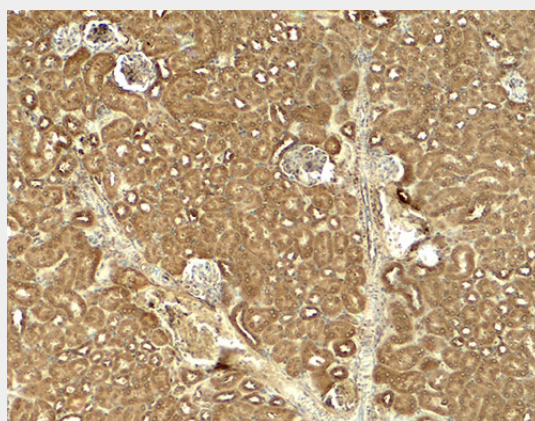
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

JAK2 Antibody - 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.

JAK2 Antibody - 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).

JAK2 Antibody - References

- Wilks AF, Harpur AG, Kurban RR, et al. Two novel protein-tyrosine kinases, each with a second phosphotransferase-related catalytic domain, define a new class of protein kinase. *Mol. Cell Biol.* 1991; 11:2057-66.
- Quintas-Cardama A and Verstovsek S. Molecular pathways: JAK/STAT pathway: mutations, inhibitors, and resistance. *Clin. Can. Res.* 2013; 19:1933-40.
- Levine RL, Pardanani A, Tefferi A, et al. Role of JAK2 in the pathogenesis and therapy of myeloproliferative disorders. *Nat. Rev. Cancer* 2007; 7:673-83.
- Neubauer H, Cumano A, Muller M, et al. Jak2 deficiency defines an essential developmental checkpoint in definitive hematopoiesis. *Cell* 1998; 93:397-409.