

Recombinant Human JAK2 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50582

Size: 10ug, 100ug

Protein Name: Tyrosine-protein kinase JAK2 (EC 2.7.10.2) (Janus kinase 2) (JAK-2)

Synonym: JAK2

UniProt ID: O60674

UniProt Link: www.uniprot.org/uniprotkb/O60674/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 1132 AA

Molecular Weight: 131 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MGMACLTMTMEGTSTSSIIYQNGDISGNANSMKQIDPVLQVYLYHSLGKSEADYLTFPSGEYVAEEI
CIAASKACGITPVYHNMFALMSETERIWYPPNHVFHIDESTRHNVLRYRIFYFPRWYCSGSNRAYRH
GISRGAEAPLLDDFVMSYLFQWRHDFVHGWIQVPVTHETQEECLGMAVLDMMRIAKENDQTPLAIY
NSISYKTFLPKCIKRAKIQDYHILTRKIRYRFRRFIQQFSQCKATARNLKLKYLINLETLSAFYTEKFEV
KEPGSGPSGEEIFATIIITGNGGIQWSRGKHKESETLTEQDLQLYCDFPNIIDVSIKQANQEGSNESRV
VTIHKQDGKNLEIELSSREALSFVSLIDGYRLTADAHHYLCKEVAPPAVLENIQSNCHGPISMDFAIS
KLKAGNQGTGLYVLRCSPKDFNKYFLTFAVERENVIEYKHCLITKNENEEYNLSGTCKNFSSLKDLLN
CYQMETVRSDNIIFQFTKCCPPKPKDKSNLLVFRTNGVSDVPTSPTLQRPTHMNQMVFHKIRNEDLIF
NESLGQGTFTKIFKGVRRVVGQDYGQLHETEVLLKVLDAHRNYSSESFFEAASMMSKLSHKHLVLNY
GVCVCGDENILVQEFVKFGSLDYLKKNKNCINILWKLEVAKQLAWAMHFLEENTLIHGNVCAKNILLI
REEDRKTGNPPFIKLSDPGISITVLPKDILQERIPWVPPECIENPKNLNLATDKWSFGTTLWEICSGGD
KPLSALDSQRKLQFYEDRHQLPAPKWAELANLINNCMDYEPDFRPSFRAIRDNLNSLFTPDYELLTEN
DMLPNMRIGALGFSGAFEDRDPTQFEERHLKFLQQLGKGNFGSVEMCRYDPLQDNTGEVVAVKKL
QHSTEEHLRDFEREIEILKSLQHDNIVKYKGVCSAGRRNLKLIMEYLPYGSLRDYLQKHKERIDHIKL
LQYTSQICKGMEYLGTKRYIHRDLATRNILVENENRVKIGDFGLTKVLPQDKEYYKVKEPGESPIFWY
APESLTESKFSVASDVWSFGVVLYELFTYIEKSKSPPAEFMRMIGNDKQGGQMIVFHLLIELLKNNGRLP
RPDGCPEIYIMMTECWNNNVNQRPFRDLALRVDQIRDNMAG



3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Tyrosine-protein kinase JAK2 (EC 2.7.10.2) (Janus kinase 2) (JAK-2) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein 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).

Subcellular Localization: Endomembrane system ; Peripheral membrane protein . Cytoplasm . Nucleus .

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.