

PRODUCT INFORMATION



TYK2 JH2 Domain (human, recombinant; aa 575-869)

Item No. 42270

Overview and Properties

Synonyms: Human Tyrosine Kinase 2, IMD35, JTK1, Non-receptor Tyrosine-protein Kinase
Source: Active recombinant human N-terminal DYKDDDDK-tagged TYK2 JH2 domain expressed in insect cells
Amino Acids: 575-869
Uniprot No.: P29597
Molecular Weight: 34 kDa
Storage: -80°C (as supplied)
Stability: ≥6 months
Purity: ≥84% estimated by SDS-PAGE
Supplied in: 40 mM Tris-HCl, pH 8.0, with 110 mM sodium chloride, 2.2 mM potassium chloride, 0.04% polysorbate 20, 20% glycerol, and 3 mM DTT

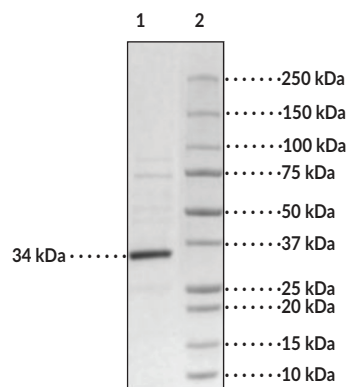
Protein

Concentration: *batch specific* mg/ml

Bioactivity: See figures for details

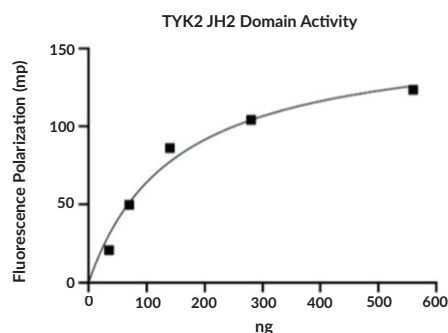
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: TYK2 JH2 Domain
Lane 2: MW Markers

SDS-PAGE Analysis of TYK2 JH2 Domain.
TYK2 JH2 domain has a calculated molecular weight of 34 kDa.



Binding of TYK2 JH2 Domain to a fluorescently labeled probe.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

Tyrosine kinase 2 (TYK2) is a member of the JAK family of non-receptor tyrosine kinases that has a key role in cytokine signaling.^{1,2} It is composed of an N-terminal FERM homology domain, which mediates protein-protein interactions, a Src-homology 2 (SH2) domain, an autoinhibitory and catalytically inactive pseudokinase domain (JH2), and a C-terminal kinase domain.¹ TYK2 is expressed by a variety of immune cells, including T cells, B cells, dendritic cells, mast cells, and macrophages, where it associates with numerous cytokine receptor chains, including IFN- α/β receptor 1 (IFNAR1), IL-12R β 1, IL-10R2, glycoprotein 130 (gp130), and IL-13R α 1, to mediate STAT-dependent cytokine signaling.¹⁻³ TYK2 is activated by its phosphorylation, which is induced by ligand-bound cytokine receptors via JAK1 or JAK2-mediated transactivation, and is inhibited by suppressor of cytokine signaling (SOCS) proteins or autoinhibited by the JH2 domain.^{1,4} TYK2 has roles in numerous immunological processes, including inflammatory and autoimmune diseases, pathogen defense, and allergy, as well as tumor surveillance and cancer.^{1,3} TYK2 containing an isoleucine-to-serine substitution (TYK2^{I684S}) in the JH2 domain has reduced activity but restores cytokine-induced signaling when expressed in TYK2^{-/-} U1A cells.⁵ TYK2 SNPs have been identified in patients with acute myeloid leukemia, and TYK2 polymorphisms have been associated with systemic lupus erythematosus (SLE) and multiple sclerosis in humans.¹ Cayman's TYK2 JH2 Domain (human, recombinant; aa 575-869) protein can be used for binding assays.

References

1. Strobl, B., Stoiber, D., Sexl, V., *et al.* Tyrosine kinase 2 (TYK2) in cytokine signalling and host immunity. *Front. Biosci. (Landmark Ed.)* **16(9)**, 3214-3232 (2011).
2. Garrido-Trigo, A. and Salas, A. Molecular structure and function of janus kinases: Implications for the development of inhibitors. *J. Crohns Colitis* **14(Suppl 2)**, S713-S724 (2020).
3. Karjalainen, A., Shoebridge, S., Krunic, M., *et al.* TYK2 in tumor immunosurveillance. *Cancers (Basel)* **12(1)**, 150 (2020).
4. Burke, J.R., Cheng, L., Gillooly, K.M., *et al.* Autoimmune pathways in mice and humans are blocked by pharmacological stabilization of the TYK2 pseudokinase domain. *Sci. Transl. Med.* **11(502)**, eaaw1736 (2019).
5. Li, Z., Gakovic, M., Ragimbeau, J., *et al.* Two rare disease-associated Tyk2 variants are catalytically impaired but signaling competent. *J. Immunol.* **190(5)**, 2335-2344 (2013).

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