

## Interleukin-2

<b>Name</b>	Interleukin-2
<b>Synonyms</b>	<ul style="list-style-type: none"> <li>• IL-2</li> <li>• T-cell growth factor</li> <li>• TCGF</li> </ul>
<b>Gene Name</b>	IL2
<b>Organism</b>	Human
<b>Amino acid sequence</b>	<pre>&gt;1c1 BSEQ0002049 Interleukin-2 MYRMQLLSICIALSLALVTNSAPTSSSTKKTQLQLEHLLLDLQMILNGINNYKNPKLTRML TFKFYMPKKATELKHLQCLEEELKPLEEVLNLAQSKNFHLRPRDLISINVIVLELKGSE TTFMCEYADETATIVEFLNRWITFCQSIISTLT</pre>
<b>Number of residues</b>	153
<b>Molecular Weight</b>	17627.52
<b>Theoretical pI</b>	7.95
<b>GO Classification</b>	<p>Functions</p> <ul style="list-style-type: none"> <li>• cytokine activity</li> </ul>

- carbohydrate binding
- interleukin-2 receptor binding
- glycosphingolipid binding
- kinase activator activity
- growth factor activity

#### Processes




- natural killer cell activation
- innate immune response
- positive regulation of interleukin-17 production
- vascular endothelial growth factor receptor signaling pathway
- immune response
- positive regulation of B cell proliferation
- positive regulation of cytosolic calcium ion concentration
- positive regulation of tissue remodeling
- positive regulation of cell growth
- positive regulation of isotype switching to IgG isotypes
- Fc-epsilon receptor signaling pathway
- negative regulation of lymphocyte proliferation
- positive regulation of cell proliferation
- negative regulation of protein phosphorylation
- activation of MAPKK activity
- positive regulation of regulatory T cell differentiation
- protein kinase C-activating G-protein coupled receptor signaling pathway
- extrinsic apoptotic signaling pathway in absence of ligand
- fibroblast growth factor receptor signaling pathway
- regulation of T cell homeostatic proliferation
- positive regulation of inflammatory response
- small GTPase mediated signal transduction
- negative regulation of B cell apoptotic process
- insulin receptor signaling pathway
- negative regulation of inflammatory response
- cell-cell signaling
- MAPK cascade

- positive regulation of tyrosine phosphorylation of Stat5 protein
- negative regulation of heart contraction
- negative regulation of apoptotic process
- cell adhesion
- positive regulation of interferon-gamma production
- T cell differentiation
- neurotrophin TRK receptor signaling pathway
- positive regulation of immunoglobulin secretion
- axon guidance
- positive regulation of dendritic spine development
- positive regulation of transcription from RNA polymerase II promoter
- adaptive immune response
- epidermal growth factor receptor signaling pathway
- positive regulation of activated T cell proliferation
- Ras protein signal transduction

#### Components

- extracellular space
- intracellular
- cytosol
- extracellular region

<b>General Function</b>	Kinase activator activity
<b>Specific Function</b>	Produced by T-cells in response to antigenic or mitogenic stimulation, this protein is required for T-cell proliferation and other activities crucial to regulation of the immune response. Can stimulate B-cells, monocytes, lymphokine-activated killer cells, natural killer cells, and glioma cells.
<b>Pfam Domain Function</b>	<ul style="list-style-type: none"> <li>• IL2 (PF00715 <a href="http://pfam.sanger.ac.uk/family?acc=PF00715">🔗</a> (http://pfam.sanger.ac.uk/family?acc=PF00715))</li> </ul>
<b>Transmembrane Regions</b>	Not Available
<b>GenBank Protein ID</b>	5729676 <a href="http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=5729676">🔗</a> (http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=5729676)

<b>UniProtKB ID</b>	P60568  ( <a href="http://www.uniprot.org/uniprot/P60568">http://www.uniprot.org/uniprot/P60568</a> )
<b>UniProtKB Entry Name</b>	IL2_HUMAN  ( <a href="http://www.uniprot.org/uniprot/IL2_HUMAN">http://www.uniprot.org/uniprot/IL2_HUMAN</a> )
<b>Cellular Location</b>	Secreted
<b>Gene sequence</b>	<pre>&gt;lcl BSEQ0016290 Interleukin-2 (IL2) ATGTACAGGATGCAACTCCTGTCTTGCATTGCACTAAGTCTTGCACCTTGTACACAAACAGT GCACCTACTTCAAGTTCTACAAAGAAAACACAGCTACAACCTGGAGCATTTACTGCTGGAT TTACAGATGATTTTGAATGGAATTAATAATTACAAGAATCCCAAACCTCACCAGGATGCTC ACATTTAAGTTTTACATGCCAAGAAGGCCACAGAAGTCAAACATCTTCAGTGTCTAGAA GAAGAACTCAAACCTCTGGAGGAAGTCTAAATTTAGCTCAAAGCAAAAACCTTCACTTA AGACCCAGGGACTTAATCAGCAATATCAACGTAATAGTTCTGGAAGTAAAGGGATCTGAA ACAACATTCATGTGTGAATATGCTGATGAGACAGCAACCATTGTAGAATTTCTGAACAGA TGGATTACCTTTTGTCAAAGCATCATCTCAACACTGACTTGA</pre>
<b>GenBank Gene ID</b>	J00264  ( <a href="http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=J00264">http://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=J00264</a> )
<b>GeneCard ID</b>	Not Available
<b>GenAtlas ID</b>	IL2  ( <a href="http://www.dsi.univ-paris5.fr/genatlas/fiche1.php?symbol=IL2">http://www.dsi.univ-paris5.fr/genatlas/fiche1.php?symbol=IL2</a> )
<b>HGNC ID</b>	HGNC:6001  ( <a href="http://www.genenames.org/data/hgnc_data.php?hgnc_id=HGNC:6001">http://www.genenames.org/data/hgnc_data.php?hgnc_id=HGNC:6001</a> )
<b>Chromosome Location</b>	4
<b>Locus</b>	4q26-q27
<b>References</b>	<ol style="list-style-type: none"> <li>1. Maeda S, Nishino N, Obaru K, Mita S, Nomiya H, Shimada K, Fujimoto K, Teranishi T, Hirano T, Onoue K: Cloning of interleukin 2 mRNAs from human tonsils. <i>Biochem Biophys Res Commun.</i> 1983 Sep 30;115(3):1040-7. 6312994  (<a href="http://www.ncbi.nlm.nih.gov/pubmed/6312994">http://www.ncbi.nlm.nih.gov/pubmed/6312994</a>)</li> <li>2. Taniguchi T, Matsui H, Fujita T, Takaoka C, Kashima N, Yoshimoto R, Hamuro J: Structure and expression of a cloned cDNA for human interleukin-2. <i>Nature.</i> 1983 Mar 24-30;302(5906):305-10. 6403867  (<a href="http://www.ncbi.nlm.nih.gov/pubmed/6403867">http://www.ncbi.nlm.nih.gov/pubmed/6403867</a>)</li> <li>3. Devos R, Plaetinck G, Cheroutre H, Simons G, Degraeve W, Tavernier J, Remaut E, Fiers W: Molecular cloning of human interleukin 2 cDNA and its expression in <i>E. coli</i>. <i>Nucleic Acids Res.</i> 1983 Jul 11;11(13):4307-23. 6306584  (<a href="http://www.ncbi.nlm.nih.gov/pubmed/6306584">http://www.ncbi.nlm.nih.gov/pubmed/6306584</a>)</li> <li>4. Fujita T, Takaoka C, Matsui H, Taniguchi T: Structure of the human interleukin 2 gene. <i>Proc Natl Acad Sci U S A.</i> 1983 Dec;80(24):7437-41. 6324170  (<a href="http://www.ncbi.nlm.nih.gov/pubmed/6324170">http://www.ncbi.nlm.nih.gov/pubmed/6324170</a>)</li> </ol>

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<a href="/drugs/DB02555">DB02555</a>	<b>SP4160</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB02555#bond-6605">Details (/drugs/DB02555#bond-6605)</a>
<a href="/drugs/DB02581">DB02581</a>	<b>5-[2,3-Dichloro-4-(5-{1-[2-(2-Guanidino-4-Methyl-Pentanoylamino)-Acetyl]-Piperidin-4-Yl}-1-Methyl-1h-Pyrazol-3-Yl)-Phenoxymethyl]-Furan-2-Carboxylic Acid</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB02581#bond-6617">Details (/drugs/DB02581#bond-6617)</a>
<a href="/drugs/DB03453">DB03453</a>	<b>(R)-N[2-[1-(aminoiminomethyl)-3-piperidinyl]-1-oxoethyl]-4-(phenylethynyl)-l-phenylalanine methylester</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB03453#bond-7246">Details (/drugs/DB03453#bond-7246)</a>
<a href="/drugs/DB03957">DB03957</a>	<b>SP2456</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB03957#bond-7551">Details (/drugs/DB03957#bond-7551)</a>
<a href="/drugs/DB04278">DB04278</a>	<b>2-[2-(2-Cyclohexyl-2-Guanidino-Acetylamino)-Acetylamino]-N-(3-Mercapto-Propyl)-Propionamide</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB04278#bond-7830">Details (/drugs/DB04278#bond-7830)</a>
<a href="/drugs/DB05299">DB05299</a>	<b>keyhole limpet hemocyanin</b>	investigational	<a href="#">unknown</a>		<a href="/drugs/DB05299#bond-9909">Details (/drugs/DB05299#bond-9909)</a>
<a href="/drugs/DB05304">DB05304</a>	<b>WX-G250</b>	investigational	<a href="#">unknown</a>		<a href="/drugs/DB05304#bond-9924">Details (/drugs/DB05304#bond-9924)</a>
<a href="/drugs/DB05676">DB05676</a>	<b>Apremilast</b>	approved, investigational	<a href="#">unknown</a>		<a href="/drugs/DB05676#bond-13113">Details (/drugs/DB05676#bond-13113)</a>
<a href="/drugs/DB03372">DB03372</a>	<b>3-Mercapto-1-(1,3,4,9-Tetrahydro-B-Carbolin-2-Yl)-Propan-1-One</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB03372#bond-22167">Details (/drugs/DB03372#bond-22167)</a>
<a href="/drugs/DB03455">DB03455</a>	<b>(1H-indol-3-yl)-(2-mercapto-ethoxyimino)-acetic acid</b>	experimental	<a href="#">unknown</a>		<a href="/drugs/DB03455#bond-22221">Details (/drugs/DB03455#bond-22221)</a>

Showing 1 to 10 of 11 entries

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