

## Recombinant Mouse IL-12 p40 Homodimer (carrier-free)

<b>Catalog# / Size</b>	573102 / 10 µg 573104 / 25 µg
<b>Regulatory Status</b>	RUO
<b>Other Names</b>	IL-12 p80, IL-12 subunit p40, IL-23 subunit p40, Cytotoxic lymphocyte maturation factor, CLMF2, Natural killer cell stimulatory factor 40-KD subunit, NKSF2
<b>Description</b>	IL-12 and IL-23 share the p40 subunit, which heterodimerizes respectively with IL-12 p35 or IL-23 p19 subunits to form IL-12 or IL-23. IL-12 p40 exists as a monomer and as a homodimer (IL-12 p80). IL-12 induction is relevant in asthmatic airway inflammation. IL-12 expression can be induced by mouse parainfluenza type I (Sendai) virus and its source is airway epithelial cells. In that experimental model, IL-12 induction is followed by excessive expression of IL-12 p40 that could be further enhanced in IL-12 p35-deficient mice. Overexpression of IL-12 p80 causes macrophage accumulation and contributes to airway inflammation and consequent morbidity during viral bronchitis. Amplified epithelial IL-12 p40 expression and augmented concentrations of BAL fluid IL-12 p40 (but not IL-12 p70) has been detected in asthmatic subjects. It has been demonstrated that p80, but not IL-12 or p40, induces macrophage chemotaxis that is independent of IL-12 and mediated through the cytoplasmic tail of IL-12b1. Additional studies with transgenic mice suggest that overexpression of IL-12 p80 prior to a viral infection increases the number of resident airway macrophages, and this primes the host for a protective response against a lethal respiratory viral infection. In addition, it has been suggested that p80 functions as a competitive antagonist of IL-12 p70. Mouse Con A-activated splenocytes display identical binding affinities for p80 and IL-12, and in these cells p80 competitively inhibited IL-12 binding and IL-12-dependent proliferation. Furthermore, p80 is able to inhibit IL-12-dependent IFN $\gamma$ production in freshly isolated splenocytes.

### Product Details

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<b>Source</b>	Mouse IL-12 p40 homodimer, amino acids Met23-Ser335 (Accession # NM_008352), was expressed in insect cells.
<b>Molecular Mass</b>	The 313 amino acid recombinant protein has a predicted molecular mass of 35.8 kD. The DTT-reduced protein migrates at approximately 40 kD and the non-reduced protein migrates at approximately 75 kD by SDS-PAGE. The N-terminal amino acid is Met.
<b>Purity</b>	>98%, as determined by Coomassie stained SDS-PAGE.
<b>Formulation</b>	0.22 µm filtered protein solution is in 20 mM Tris-HCl, pH 8.0, 0.1 M NaCl
<b>Endotoxin Level</b>	Less than 0.01 ng per µg cytokine as determined by the LAL method.
<b>Concentration</b>	10 and 25 µg sizes are bottled at 100 µg/mL. 100 µg and larger sizes are lot-specific and bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our <a href="#">Concentration and Expiration Lookup</a> or <a href="#">Certificate of Analysis</a> online tools.
<b>Storage &amp; Handling</b>	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 µg/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week and stored at -20°C or colder for up to 3 months. <b>Avoid repeated freeze/thaw cycles.</b>
<b>Activity</b>	ED <sub>50</sub> = 1- 4 ng/ml corresponding to a specific activity of 1.0 - 0.25 x 10 <sup>6</sup> units/mg, as determined by the dose dependent inhibition of IL-12-dependent IFN $\gamma$ production in splenocytes.
<b>Application</b>	<a href="#">Bioassay</a>
<b>Application Notes</b>	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue-ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our <a href="#">100% satisfaction guarantee</a> . If you have any concerns, contact us at <a href="mailto:tech@biolegend.com">tech@biolegend.com</a> .

## Application References

(PubMed link indicates BioLegend citation)

1. Wang X, et al. 1999. *Eur. J. Immunol.* 29:2007.
2. Walter JM, et al. 2001. *J. Exp. Med.* 193:339.
3. Russell TD, et al. 2003. *J. Immunol.* 171:6866.
4. Mikols CL, et al. 2006. *Am. J. Respir. Crit. Care* 174:461.
5. Gunsten S, et al. 2008. *Immunology* 126:500.
6. Jana M, et al. 2009. *Glia* 57:1553.
7. Yabu M, et al. 2010. *Int Immunol.* 23:29. [PubMed](#)

## Product Citations

1. Yabu M, et al. 2011. *Int Immunol.* 23:29. [PubMed](#)

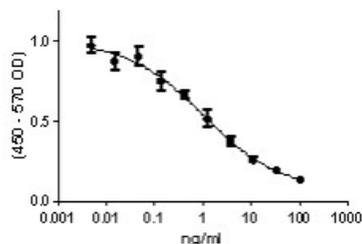
## Antigen Details

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<b>Structure</b>	Homodimer
<b>Distribution</b>	IL-12 p40 homodimer is produced by airway epithelial cells. The expression level of p40 is much higher than that of p35 in IL-12 p70-producing cells; therefore, monocytes, macrophages, neutrophils, dendritic cells, and B cells might express p40 homodimer.
<b>Function</b>	p40 homodimer functions as a proinflammatory protein that enhances leukocyte accumulation in the skin, blunt Th1 immunity to <i>Plasmodium berghei</i> , and provides protective immunity toward mycobacterial infection. In addition, p40 homodimer induces macrophage chemotaxis independent of IL-12. Also, IL-12 p40 homodimer (p402) induces the expression of inducible nitric oxide synthase (iNOS) in microglia.
<b>Interaction</b>	Airway epithelial cell, macrophages, microglia, and spleenocytes.
<b>Ligand/Receptor</b>	IL-12R $\beta$ 1
<b>Biology Area</b>	Cell Biology, Immunology, Innate Immunity
<b>Molecular Family</b>	Cytokines/Chemokines
<b>Gene ID</b>	<a href="#">3593</a>

## Product Data

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Mouse IL-12 p40 homodimer is able to inhibit IL-12-dependent IFN $\gamma$  production in splenocytes.

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