Recombinant Human CCL2 (MCP-1) (carrier-free)

Catalog# / Size	571408 / 500 µg 571402 / 10 µg 571404 / 25 µg 571406 / 100 µg
Regulatory Status	RUO
Other Names	Monocyte chemotactic and activating factor (MCAF), monocyte secretory protein JE, small inducible cytokine A2 (SCYA2)
Description	CCL2, also known as MCP-1, is a member of the CC ß chemokine family. It is widely expressed in endothelial cells, smooth muscle cells and monocytes in response to several atherogenic stimulants such as CD40 ligand, platelet derived growth factor (PDGF), interleukin-1β (IL-1β) and oxidized low density lipoprotein. Several recent in vivo studies have disclosed critical roles of MCP1 in atherosclerosis. In addition, MCP-1 has been implicated in monocytic infiltration of tissues during several inflammatory diseases, and has been implicated in macrophage-mediated tumor growth suppression in mice. CCL2 has been shown to have direct effects on tumor cells in an autocrine and paracrine fashion in multiple cancers, including breast, lung, cervix, ovary, sarcoma, and prostate. In addition, MCP-1 plays a key role in the regulation of MMPs during transmigration.MCP-1/CCl2 has been described as a new diagnostic marker and therapeutic target for progressive renal injury in diabetic nephropathy. Kidney epithelial cells, including glomerular podocytes and tubular cells make MCP-1 in response to high glucose and advanced glycation end products. MCP-1 promotes inflammation and progressive injury in diabetic kidneys. The importance of MCP-1 in the early development of diabetic nephropathy has been determined in animal models incorporating genetically deficient mice or therapeutic blockade of MCP-1 receptor (CCR2).

Product Details

Source	Human MCP1, amino acids Gln24-Thr99 (NM_002982) was expressed in *E. coli.*
Molecular Mass	The 76 amino acid recombinant protein has a predicted molecular mass of approximately 8,685 Da. The DTT-reduced protein migrates at approximately 8kDa and non-reduced protein migrates at approximately 13kDa by SDS-PAGE. The N-terminal amino acid is Glycine.
Purity	Purity is >98%, as determined by Coomassie stained SDS-PAGE.
Formulation	0.22 µm filtered protein solution is in 10 mM $NaHPO_4$ pH 7.2, 0.15 M NaCl.
Endotoxin Level	Less than 0.01ng per µg cytokine as determined by the LAL method.
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg size 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 Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	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. **Avoid repeated freeze/thaw cycles.**
Activity	ED_{50} = 6-15 ng/ml, corresponding to a specific activity of 1.6-0.6 x 10^5 units/mg, as determined by the dose dependent chemoattraction of THP-1 cells
Application	Bioassay
Application Notes	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 100% satisfaction guarantee. If you have any concerns, contact us at tech@biolegend.com.

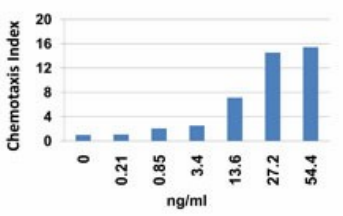
Product Citations

1. Zimmerlin L, Park TS 2016. Development. 143(23):4368-4380. PubMed
2. Zhichao Fan *et al.* 2019. Cell reports. 26(1):119-130 . PubMed
3. Lima LG, *et al.* 2021. Nat Commun. 12:3543. PubMed
4. Fan Z, *et al.* 2020. STAR Protoc. 1:100012. PubMed
5. Wei H, *et al.* 2015. J Lipid Res. 56: 2337 - 2347. PubMed

Antigen Details

Structure	Chemokine
Distribution	MCP-1 (CCL2) is secreted by fibroblast, endothelial cells, smooth muscle cells, tumor cells, phytohemaglutinin stimulated mononuclear cells.
Function	MCP-1 induces migration of monocytes, memory/activated T cells, NK cells, myeloid dendritic cells, neutrophils, astrocytes, mesangial cells, and bone marrow endothelial cells. MCP-1 is induced by IL-1b, TNF, IFNg, PDGF, IL-4, MIF, and IL-17.
Ligand/Receptor	MCP-1 mediates its cellular effects primarily through CCR2 receptor
Cell Type	Hematopoietic stem and progenitors
Biology Area	Cell Biology, Neuroinflammation, Neuroscience, Stem Cells
Molecular Family	Cytokines/Chemokines
Antigen References	1. Loberg RD, *et al.* 2007. *Cancer Research.* 67:9417-9424. 2. Gregory JL, *et al.* 2006. *J. Immunol.* 177:8072-8079. 3. Qui Z, *et al.* 2009. *Immunology.* 214:835-842. 4. Reichel CA, *et al.* 2009. *Arterioscler Thromb Vasc Biol. ATVBAHA.*109.193268v1 5. McQuibban GA, *et al.* 2002. *Blood* 100:1160-1167 5. Tesh GH, *et al.* 2008. *Amm J Physiol Renal Physiol.* 294:F697-F701.
Gene ID	6347

Product Data



THP-1 cells chemoattracted by human MCP-1.

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