

## MCP-1/CCL2 Protein, Mouse (HEK293, His)

Cat. No.:	HY-P72757
Synonyms:	C-C motif chemokine ligand 2; GDCF-2; HC11; HSMCR30; MCAF; SCYA2; SMC-CF
Species:	Mouse
Source:	HEK293
Accession:	P10148 (Q24-N148)
Gene ID:	20296
Molecular Weight:	20-36 kDa

### PROPERTIES

AA Sequence	<p>Q P D A V N A P L T    C C Y S F T S K M I    P M S R L E S Y K R    I T S S R C P K E A</p> <p>V V F V T K L K R E    V C A D P K K E W V    Q T Y I K N L D R N    Q M R S E P T T L F</p> <p>K T A S A L R S S A    P L N V K L T R K S    E A N A S T T F S T    T T S S T S V G V T</p> <p>S V T V N</p>
Appearance	Solution.
Formulation	Supplied as a 0.2 µm filtered solution of 20 mM Tris, 500 mM NaCl, 10% glycerol, pH 7.4 .
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	N/A
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

### DESCRIPTION

Background	<p>CCL2, also known as monocyte chemotactic protein 1 (MCP1), is a small cell factor belonging to the CC chemokine family. The CCL2 gene, located in the q11.2-q12 region of human chromosome 17, encodes a monomeric polypeptide with a molecular weight of 9-15 kDa, depending on the level of glycosylation. CCL2 is mainly secreted by monocytes, macrophages and dendritic cells. It is secreted by monocytes, macrophages and dendritic cells, and platelet-derived growth factor is the main inducer of the CCL2 gene. Astrocytes and microglia are also thought to be the source of CCL2<sup>[1]</sup>. CCL2 signals through binding to and activation of CCR2 and induces a strong chemotactic response and intracellular mobilization of calcium ions. Among other things, CCL2/CCR2 can regulate cell adhesion and chemotaxis of macrophages by activating the β1 integrin and p38-MAPK signaling pathways. In addition to acting as a chemoattractant, CCL2 can also regulate brain endothelial permeability in vitro by altering tight junction (TJ) proteins and regulating the expression of endothelial adhesion molecules</p>
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and leukocyte integrins as well as cytokine production. In addition, the CCL2-CCR2 signaling axis has been implicated in many inflammatory and neurodegenerative diseases, acting to recruit inflammatory cells into the CNS<sup>[2]</sup>. Originally described as a "tumor-derived chemokine", CCL2 has been shown to be a potent chemokine for many types of immune cells and a potential target for the treatment of many diseases, such as atherosclerosis, multiple sclerosis, asthma, neuropathic pain, diabetic nephropathy, and cancer<sup>[3]</sup>.

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## REFERENCES

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- [1]. Qiongyu Hao, et al. CCL2/CCR2 signaling in cancer pathogenesis. *Cell Commun Signal*. 2020 May 29;18(1):82.
- [2]. Svetlana M Stamatovic, et al. Monocyte chemoattractant protein-1 regulation of blood-brain barrier permeability. *J Cereb Blood Flow Metab*. 2005 May;25(5):593-606.
- [3]. Rachel N Gomes, et al. Bacterial clearance in septic mice is modulated by MCP-1/CCL2 and nitric oxide. *Shock*. 2013 Jan;39(1):63-9.
- [4]. Lijun Zhang, et al. Effect of chemokine CC ligand 2 (CCL2) on  $\alpha$ ?synuclein?induced microglia proliferation and neuronal apoptosis. *Mol Med Rep*. 2018 Nov;18(5):4213-4218.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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