

## MCP-1/CCL2 Protein, Mouse (sf9, His)

Cat. No.:	HY-P74758
Synonyms:	C-C motif chemokine 2; MCAF; MCP-1; SCYA2
Species:	Mouse
Source:	Sf9 insect cells
Accession:	Q5SVU3 (Q24-N148)
Gene ID:	20296
Molecular Weight:	Approximately 27 kDa

### PROPERTIES

Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 $\mu$ m filtered solution of 20 mM Tris, 500 mM NaCl, 10% Glycerol, pH 7.4. Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.
Endotoxin Level	<1 EU/ $\mu$ g, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 $\mu$ g/mL in ddH <sub>2</sub> O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

#### Background

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  $\beta$ 1 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 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

- [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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