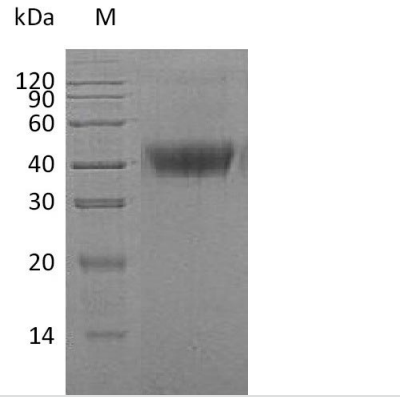
Recombinant Human Macrophage colony-stimulating factor 1 (CSF1), partial (Active)

Product Code	CSB-AP003621HU
Abbreviation	Recombinant Human CSF1 protein, partial (Active)
Uniprot No.	P09603
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered 20 mM PB, 150 mM NaCl, pH 7.2
Product Type	Colony Stimulating Factor
Immunogen Species	Homo sapiens (Human)
Biological Activity	The ED50 as determined in a cell proliferation assay using M?NFS?60 mouse myelogenous leukemia lymphoblast cells is less than 4.16 ng/ml.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	EEVSEYCSHMIGSGHLQSLQRLIDSQMETSCQITFEFVDQEQLKDPVCYLKKA FLLVQDIMEDTMRFRDNTPNAIAIVQLQELSLRLKSCFTKDYEEHDKACVRTFY ETPLQLLEKVKNVFNETKNLLDKDWNIFSKNCNNSFAECSSQDVVTKPDCNCL YPKAIPSSDPASVSPHQPLAPSMAPVAGLTWEDSEGTEGSSLLPGEQPLHTV DPGSAKQRPPR
Research Area	Immunology
Source	Mammalian cell
Target Names	CSF1
Expression Region	33-255aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal 6xHis-tagged
Mol. Weight	26.17 kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Human Macrophage colony-stimulating factor 1 (CSF1) is produced using a mammalian expression system and includes amino acids 33-255. The protein comes with a C-terminal 6xHis tag to make purification easier. It offers purity greater than 95% based on SDS-PAGE analysis and shows biological activity with an ED50 of less than 4.16 ng/ml in cell proliferation assays. Endotoxin levels stay below 1.0 EU/μg, which appears to make it suitable for sensitive research work.

CSF1 represents a key cytokine that regulates macrophage production, differentiation, and function. The protein plays what seems to be an essential role in immune responses and development of the mononuclear phagocyte system. Researchers commonly turn to CSF1 when studying hematopoiesis, immune system function, and related signaling pathways. This makes it a valuable tool for understanding cellular processes and disease mechanisms, though the complexity of these systems suggests there may be additional factors at play.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Cell Proliferation and Viability Assays for Macrophage Research

This recombinant human CSF1 can stimulate macrophage proliferation and survival in both primary cell cultures and established cell lines. The confirmed biological activity with an ED50 of less than 4.16 ng/ml in M?NFS?60 cells demonstrates its potency for dose-response studies. Researchers might investigate macrophage biology, including differentiation pathways, metabolic changes, and responses to various stimuli. Low endotoxin levels should minimize interference in cell culture experiments, though other variables could still affect results.

2. CSF1 Receptor Binding and Signaling Studies

The biologically active recombinant protein works well as a ligand for studying CSF1 receptor (CSF1R) binding kinetics and downstream signaling cascades. Scientists can perform receptor-ligand interaction assays, competition binding studies, and signal transduction pathway analysis with this protein. The C-terminal His-tag makes protein detection and quantification easier in these biochemical assays. This application appears particularly valuable for understanding CSF1R-mediated cellular responses and screening potential receptor modulators, though the complexity of cellular signaling may reveal unexpected interactions.

3. Antibody Development and Validation

The high-purity recombinant CSF1 protein can work as an antigen for generating specific antibodies against human CSF1. It also serves as a standard for validating existing antibodies. The His-tag allows for easy purification and immobilization during immunization protocols or ELISA-based antibody screening. Researchers can develop monoclonal or polyclonal antibodies for various downstream applications including Western blotting, immunoprecipitation, and flow cytometry. The mammalian expression system likely ensures proper protein folding and post-translational modifications relevant for antibody recognition.

4. Protein-Protein Interaction Studies

This recombinant CSF1 works in pull-down assays and co-immunoprecipitation experiments to identify and characterize CSF1-interacting proteins. The C-terminal His-tag allows for efficient immobilization on nickel-based affinity matrices to capture potential binding partners from cell lysates or protein libraries. Scientists can investigate both receptor-mediated and non-receptor interactions to better understand CSF1's molecular mechanisms. High protein purity should minimize background binding and enhance the specificity of interaction studies, though some weak interactions might still be missed.

5. Preclinical Disease Model Studies

The biologically active recombinant human CSF1 can be used in preclinical research models to investigate CSF1 signaling in various disease contexts. Researchers might administer this protein to study macrophage recruitment, tissue remodeling, and inflammatory responses in animal models. The confirmed activity and low endotoxin levels make it suitable for in vivo applications where CSF1 pathway modulation is required. This enables investigation of CSF1's role in cancer, inflammatory diseases, and tissue repair mechanisms, though translating findings from animal models to human conditions often presents challenges.

Endotoxin	Less than 0.01 EU/μg as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.