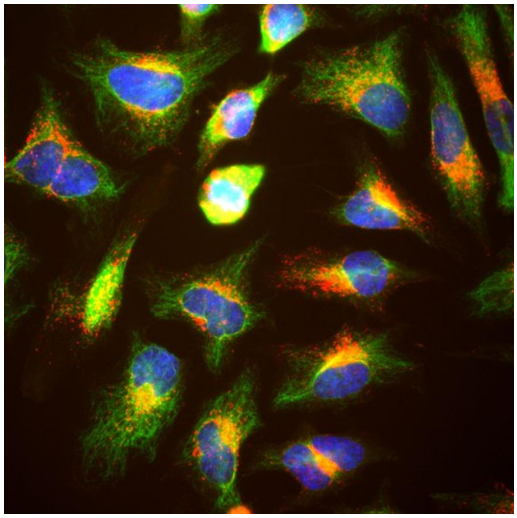
Mouse mAb to LAMP1 MCA-5H6

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
Western blot, ICC/IF, IHC	**Mouse**	**IgG1**	**~90 and 120kDa**	**Hu, Rt, Ms**

Western strip blots of HeLa cell crude extracts stained with anti LAMP1 antibody MCA-5H6 in strip 9. The antibody binds to a diffuse band running at between ~90 and ~120kDa as expected, and show no appreciably cross reactivity with any other protein.



HeLa cells staining with MCA-5H6 (red), and counterstained with EnCor chicken polyclonal antibody to vimentin CPCA-Vim (green) and DNA (blue). The MCA-5H6 antibody reveals strong punctate cytoplasmic staining corresponding to lysosomes and late endosomes, while the vimentin antibody reveals cytoplasmic intermediate filaments.

Background: As the name suggests, LAMP1 is a protein primarily associated with the lysosomal membrane. Antibodies to LAMP1 are therefore excellent markers of lysosomes in mammalian cells, though some LAMP1 may also be seen on late endosomes and on the plasma membrane. In a typical cell LAMP1 is associated with spherical vesicles located next to the nucleus and the microtubule organizing center (1). The protein is also known as CD107a, lysosomal associated membrane glycoprotein 1, LGP120 and LAMPA, as the protein was independently discovered and named by several different labs. CD is an abbreviation for "Cluster of Differentiation" and refers to a protocol for the naming of proteins and other surface markers of human leukocytes defined by binding of specific monoclonal antibodies.

LAMP1 is found on the cell surface of lymphocytes undergoing degranulation, a process in which cytoplasmic vesicles fuse with the plasma membrane, and this phenomena resulted in discovery of LAMP1 as a CD protein. The LAMP1 protein has a large N-terminal region which is inside the lysosome, hence topologically external to the cell, which is often referred to as the lumenal domain (2). The lumenal domain consists of two homologous globular segments separated by a proline rich sequence. Next there is a single membrane spanning domain and a short 11 amino acid C-terminal cytoplasmic tail. This tail region contains, at the extreme C-terminus, a so-called YXXI motif which is responsible for the sorting of the intact molecule to the endosome and lysozome, where Y = tyrosine, I = isoleucine and X = almost any amino acid (3). This motif is found in several other lysosomal proteins, where it functions in the same way. There are 417 amino acids in the human LAMP1 molecule, giving a native molecular weight of 44.8 kDa. However, the N-terminal lumenal segment of LAMP1 is very heavily and variably glycosylated due to the presence of 18 N-linked glycosylation sites, so that on SDS-PAGE and on Western blots the protein runs as a diffuse band at 90-120 kDa. The HGNC name for this protein is LAMP1.

Ordering Information
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HGNC name: LAMP1
RRID: AB_2572342
Immunogen: Full length human Lamp1 purified from E. coli
Format: Affinity purified at 1mg/mL in PBS, 50% glycerol, 5mM NaN_3
Storage: Shipped on ice. Store at 4°C for short term, for longer term at -20°C. Avoid freeze / thaw cycles.
Recommended dilutions:
Western blot: 1:10,000.
ICC/IF and IHC: 1:2,000.

References:

1. Matteoni, R. and Kreiss, T. E. Translocation and clustering of endosomes and lysosomes depends on microtubules. J. Cell Biol. 105:1253-1265 (1987).
2. Howe CL, Granger BL, Hull M, Green SA, Gabel CA, Helenius A, Mellman I. Derived protein sequence, oligosaccharides, and membrane insertion of the 120-kDa lysosomal membrane glycoprotein (lgp120): identification of a highly conserved family of lysosomal membrane glycoproteins. Proc Natl Acad Sci U S A. 85:7577-81 (1988).
3. Rohrer J, Schweizer A, Russell D, Kornfeld S. The targeting of Lamp1 to lysosomes is dependent on the spacing of its cytoplasmic tail tyrosine sorting motif relative to the membrane. J Cell Biol. 132:565-76 (1996).

Abbreviation Key:
mAb—Monoclonal Antibody **pAb**—Polyclonal Antibody **WB**—Western Blot **IF**—Immunofluorescence **ICC**—Immunocytochemistry **IHC**—Immunohistochemistry **E**—ELISA **Hu**—Human **Mo**—Monkey **Do**—Dog **Rt**—Rat **Ms**—Mouse **Bo**—Cow **Po**—Pig **Ho**—Horse **Ch**—Chicken **Dr**—*D. rerio* **Dm**—*D. melanogaster* **Ce**—*C. elegans* **Sc**—*S. cerevisiae* **Sa**—*S. aureus* **Ec**—*E. coli.*