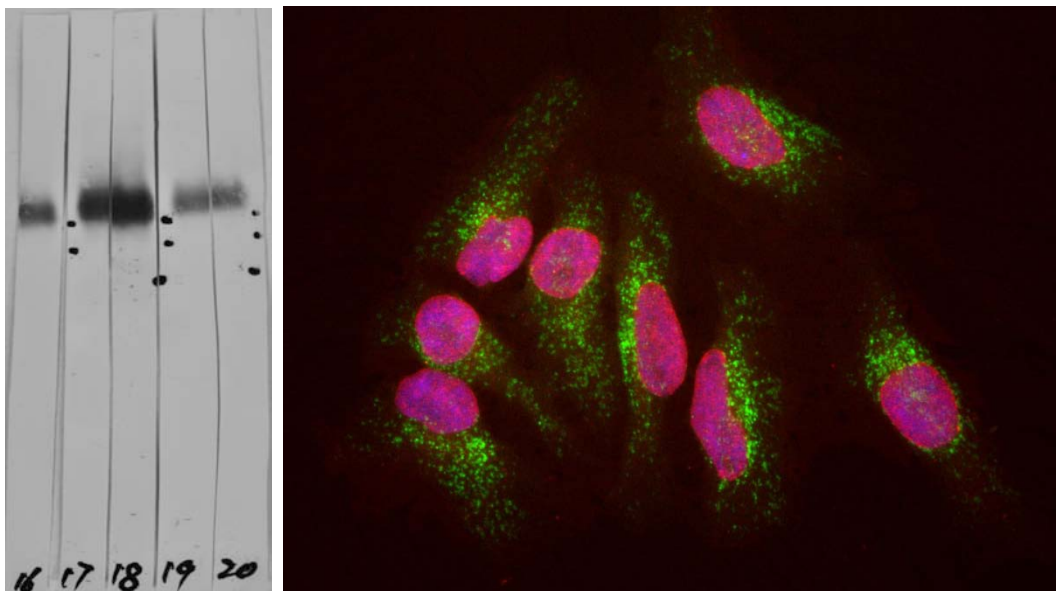


Catalogue# MCA-6E2: Mouse Monoclonal Antibody to Lysosomal Associated Membrane Protein 1 (LAMP1, a.k.a. CD107a, LGP120 and LAMPA): LAMP1

The Immunogen: 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 luminal domain (2). The luminal 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 lysosome, 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 luminal 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](#).



Left: Western strip blots of HeLa cell crude extracts with two different preparations of MCA-6E2 in strips 17 and 18. Both preparations bind to a diffuse band running at between ~90 kDa and ~120 kDa as expected, and show no appreciable cross reactivity with any other protein. **Right:** HeLa cells staining with MCA-6E2 (green), and counterstained with EnCor's chicken polyclonal antibody to Lamin A/C, [CPCA-LaminAC](#) (red) and DNA (blue). The MCA-6E2 antibody reveals strong cytoplasmic staining of lysosomes and early endosomes, while the Lamin

A/C antibody binds to the nuclear lamina. Since both DNA (blue) and Lamin A/C (red) are associated with the nuclear compartment, this region appears crimson in this image.

Antibody characteristics: MCA-6E2 is a mouse IgG1 class antibody and is known to react with LAMP1 from human, cow, pig, mouse, rat and other mammals. Since LAMP1 is highly conserved, it is likely that the antibody is effective on other species also.

Suggestions for use: The antibody is affinity purified from tissue culture supernatant and is at concentration of 1.6 mg/mL in phosphate buffered saline. The antibody solution can be used at dilutions of at least 1:500 in immunofluorescence experiments. In western blotting using chemiluminescence it can be used at dilutions of 1:5,000 or lower. Antibody preparation contains 10 mM sodium azide preservative (<http://www.encorbio.com/MSDS/azide.htm> for Material Safety Data Sheet). Avoid repeated freezing and thawing, store at 4°C or -20°C.

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 \(1996\).](#)

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.

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