SANTA CRUZ BIOTECHNOLOGY, INC.

# M13 Major Coat Protein (RL-ph1): sc-53004

## BACKGROUND

Morphogenesis of filamentous phage includes synthesis of the phage major coat protein in precursor form, its insertion into the host cell plasma membrane, its cleavage to the mature form of the protein, and its assembly there into virions. At each stage of infection, the major coat protein of coliphage M13 binds to the *E. coli* cytoplasmic membrane with its antigenic site exposed to the cell exterior, which is at the amino-terminus of the protein. Coat protein synthesized *in vitro* is initially made with a 23 amino acid amino-terminal "leader peptide", termed "procoat", that is also a biosynthetic precursor of coat protein *in vivo*. The filamentous bacteriophage major coat protein occurs as a membrane-spanning assembly intermediate prior to incorporation into the lipid-free virion. Assembly of coliphage M13 is known to occur as the viral DNA crosses the cytoplasmic membrane, shedding its virus-coded DNA unwinding protein and acquiring from the membrane approximately 2,400 copies of the major coat protein.

## REFERENCES


1. Wickner, W. 1976. Asymmetric orientation of phage M13 coat protein in *Escherichia coli* cytoplasmic membranes and in synthetic lipid vesicles. Proc. Natl. Acad. Sci. USA 73: 1159-1163.
2. Wickner, W. and Killick, T. 1977. Membrane-associated assembly of M13 phage in extracts of virus-infected *Escherichia coli*. Proc. Natl. Acad. Sci. USA 74: 505-509.


## SOURCE

M13 Major Coat Protein (RL-ph1) is a mouse monoclonal antibody raised against isolated M13 phage coat proteins.

## PRODUCT

Each vial contains 200 µg $IgG_{2b}$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

M13 Major Coat Protein (RL-ph1) is available conjugated to agarose (sc-53004 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-53004 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-53004 PE), fluorescein (sc-53004 FITC), Alexa Fluor® 488 (sc-53004 AF488), Alexa Fluor® 546 (sc-53004 AF546), Alexa Fluor® 594 (sc-53004 AF594) or Alexa Fluor® 647 (sc-53004 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-53004 AF680) or Alexa Fluor® 790 (sc-53004 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.



## APPLICATIONS

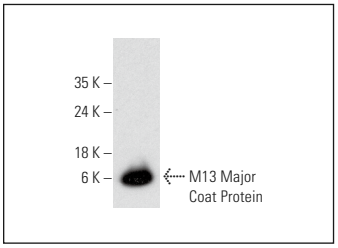
M13 Major Coat Protein (RL-ph1) is recommended for detection of M13 filamentous phage coat protein g8p by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x $10^6$ cells).

Molecular Weight of M13 Major Coat Protein: 5 kDa.

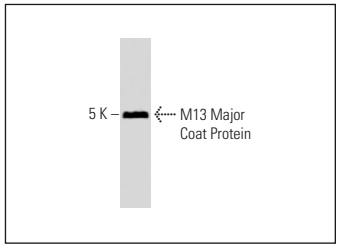
## STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA




M13 Major Coat Protein (RL-ph1) HRP: sc-53004 HRP. Direct western blot analysis of M13 Major Coat Protein expression in M13 phage whole cell lysate.




M13 Major Coat Protein (RL-ph1): sc-53004. Western blot analysis of M13 Major Coat Protein expression in M13 phage lysate.

## SELECT PRODUCT CITATIONS


1. Costantini, T.W., et al. 2009. Targeting the gut barrier: identification of a homing peptide sequence for delivery into the injured intestinal epithelial cell. Surgery 146: 206-212.
2. Gomez-Castillo, L., et al. 2020. Creating highly specific chemically induced protein dimerization systems by stepwise phage selection of a combinatorial single-domain antibody library. J. Vis. Exp. E-published.
3. Siripanthong, S., et al. 2021. Production and characterization of antibody against *Opisthorchis viverrini* via phage display and molecular simulation. PLoS ONE 16: e0248887.
4. Lyu, L., et al. 2022. TRIM44 links the UPS to SQSTM1/p62-dependent aggrephagy and removing misfolded proteins. Autophagy 18: 783-798.
5. Qiao, J., et al. 2022. Anti-GRP-R monoclonal antibody antitumor therapy against neuroblastoma. PLoS ONE 17: e0277956.
6. Rossotti, M.A., et al. 2022. Arsenal of nanobodies shows broad-spectrum neutralization against SARS-CoV-2 variants of concern *in vitro* and *in vivo* in hamster models. Commun. Biol. 5: 933.
7. Ito, T., et al. 2023. Selection of target-binding proteins from the information of weakly enriched phage display libraries by deep sequencing and machine learning. MAbs 15: 2168470.
8. Queiroz Zetune Villa Real, K., et al. 2023. A versatile synaptotagmin-1 nanobody provides perturbation-free live synaptic imaging and low linkage-error in super-resolution microscopy. Small Methods 7: e2300218.
9. Gong, Y.M., et al. 2023. Combining phage display technology with *in silico*-designed epitope vaccine to elicit robust antibody responses against emerging pathogen tilapia lake virus. J. Virol. 97: e0005023.


## RESEARCH USE

For research use only, not for use in diagnostic procedures.