

# Prohibitin (E-5): sc-377037

## BACKGROUND

Prohibitin is an evolutionarily conserved protein that has antiproliferative activity. The gene encoding human Prohibitin maps to chromosome 17q21.33 and is ubiquitously expressed. Prohibitin is a post-synthetically modified protein that is localized in the inner membrane of mitochondria, where it regulates the cell cycle by blocking the transition between the G<sub>1</sub> and S phases, and on the plasma membrane of B cells, where it mediates B cell maturation. Prohibitin mRNA and protein levels are high in G<sub>1</sub>, decline during the S phase, rise again in G<sub>2</sub> and decline in M phase, which suggests that Prohibitin controls the cell cycle by using both transcriptional and posttranslational mechanisms. Prohibitin is also a potential tumor suppressor protein that binds to retinoblastoma (Rb) and subsequently inhibits the activity of E2F family members in response to specific signaling cascades. Prohibitin 2 is a repressor of estrogen receptor activity, and is required for somatic and germline differentiation in the larval gonad during embryonic development. Mutations in the Prohibitin genes are correlated with breast cancer development and/or progression in more than 80% of the cell lines analyzed.

## CHROMOSOMAL LOCATION

Genetic locus: PHB (human) mapping to 17q21.33; Phb (mouse) mapping to 11 D.

## SOURCE

Prohibitin (E-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 21-59 near the N-terminus of Prohibitin of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Prohibitin (E-5) is available conjugated to agarose (sc-377037 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-377037 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377037 PE), fluorescein (sc-377037 FITC), Alexa Fluor® 488 (sc-377037 AF488), Alexa Fluor® 546 (sc-377037 AF546), Alexa Fluor® 594 (sc-377037 AF594) or Alexa Fluor® 647 (sc-377037 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377037 AF680) or Alexa Fluor® 790 (sc-377037 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-377037 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

## APPLICATIONS

Prohibitin (E-5) is recommended for detection of Prohibitin of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

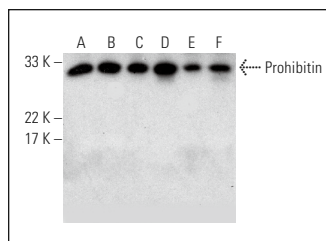
Prohibitin (E-5) is also recommended for detection of Prohibitin in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Prohibitin siRNA (h): sc-37629, Prohibitin siRNA (m): sc-37630, Prohibitin siRNA (r): sc-270448, Prohibitin shRNA Plasmid (h): sc-37629-SH, Prohibitin shRNA Plasmid (m): sc-37630-SH, Prohibitin shRNA Plasmid (r): sc-270448-SH, Prohibitin shRNA (h) Lentiviral Particles: sc-37629-V, Prohibitin shRNA (m) Lentiviral Particles: sc-37630-V and Prohibitin shRNA (r) Lentiviral Particles: sc-270448-V.

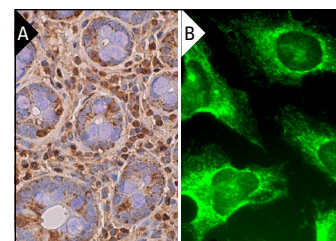
Molecular Weight of Prohibitin: 30-32 kDa.

Positive Controls: Ramos cell lysate: sc-2216, Caco-2 cell lysate: sc-2262 or A549 cell lysate: sc-2413.

## DATA



Prohibitin (E-5) HRP: sc-377037 HRP. Direct western blot analysis of Prohibitin expression in Ramos (A), Caco-2 (B), A549 (C), Hep G2 (D), NIH/3T3 (E) and C2C12 (F) whole cell lysates.



Prohibitin (E-5): sc-377037. Immunoperoxidase staining of formalin fixed, paraffin-embedded human colon tissue showing cytoplasmic staining of glandular cells and cytoplasmic and nuclear staining of interstitial cells (A). Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (B).

## SELECT PRODUCT CITATIONS

- Liu, S., et al. 2015. A novel class of small molecule compounds that inhibit Hepatitis C virus infection by targeting the Prohibitin-CRaf pathway. *EBioMedicine* 2: 1600-1606.
- MacArthur, I.C., et al. 2019. Prohibitin promotes de-differentiation and is a potential therapeutic target in neuroblastoma. *JCI Insight* 5: e127130.
- Simula, L., et al. 2020. JNK1 and ERK1/2 modulate lymphocyte homeostasis via BIM and DRP1 upon AICD induction. *Cell Death Differ.* 27: 2749-2767.
- Wang, T., et al. 2021. C9orf72 regulates energy homeostasis by stabilizing mitochondrial complex I assembly. *Cell Metab.* 33: 531-546.e9.

## RESEARCH USE

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