

# Prohibitin 2 (A-2): sc-133094

## 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.

## REFERENCE

1. Sato, T., et al. 1992. The human Prohibitin gene located on chromosome 17q21 is mutated in sporadic breast cancer. *Cancer Res.* 52: 1643-1646.
2. Roskams, A.J., et al. 1993. Cell cycle activity and expression of Prohibitin mRNA. *J. Cell. Physiol.* 157: 289-295.
3. McClung, J.K., et al. 1995. Prohibitin: potential role in senescence, development, and tumor suppression. *Exp. Gerontol.* 30: 99-124.

## CHROMOSOMAL LOCATION

Genetic locus: PHB2 (human) mapping to 12p13.31; Phb2 (mouse) mapping to 6 F2.

## SOURCE

Prohibitin 2 (A-2) is a mouse monoclonal antibody raised against amino acids 220-299 mapping at the C-terminus of Prohibitin 2 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Prohibitin 2 (A-2) is available conjugated to agarose (sc-133094 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-133094 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-133094 PE), fluorescein (sc-133094 FITC), Alexa Fluor® 488 (sc-133094 AF488), Alexa Fluor® 546 (sc-133094 AF546), Alexa Fluor® 594 (sc-133094 AF594) or Alexa Fluor® 647 (sc-133094 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-133094 AF680) or Alexa Fluor® 790 (sc-133094 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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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.

## APPLICATIONS

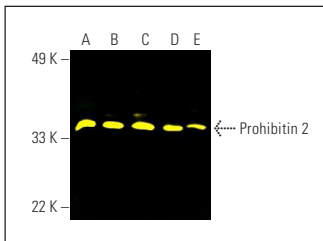
Prohibitin 2 (A-2) is recommended for detection of Prohibitin 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution 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).

Suitable for use as control antibody for Prohibitin 2 siRNA (h): sc-45849, Prohibitin 2 siRNA (m): sc-45850, Prohibitin 2 shRNA Plasmid (h): sc-45849-SH, Prohibitin 2 shRNA Plasmid (m): sc-45850-SH, Prohibitin 2 shRNA (h) Lentiviral Particles: sc-45849-V and Prohibitin 2 shRNA (m) Lentiviral Particles: sc-45850-V.

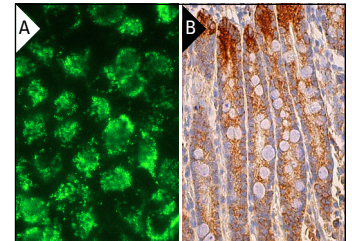
Molecular Weight of Prohibitin 2: 37 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, BJAB whole cell lysate: sc-2207 or F9 cell lysate: sc-2245.

## DATA



Prohibitin 2 (A-2) Alexa Fluor® 488: sc-133094 AF488. Direct fluorescent western blot analysis of Prohibitin 2 expression in A-431 (A), BJAB (B), F9 (C), Ramos (D) and SK-BR-3 (E) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



Prohibitin 2 (A-2): sc-133094. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear and cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human duodenum tissue showing cytoplasmic staining of glandular cells (B).

## SELECT PRODUCT CITATIONS

1. Cunningham, D.L., et al. 2013. Novel binding partners and differentially regulated phosphorylation sites clarify Eps8 as a multi-functional adaptor. *PLoS ONE* 8: e61513.
2. Wei, Y., et al. 2017. Prohibitin 2 is an inner mitochondrial membrane mitophagy receptor. *Cell* 168: 224-238.e10.
3. Yahiro, K., et al. 2019. Cholix toxin, an eEF2 ADP-ribosyltransferase, interacts with Prohibitins and induces apoptosis with mitochondrial dysfunction in human hepatocytes. *Cell. Microbiol.* 21: e13033.
4. Tiwari, S., et al. 2020. Gender-specific changes in energy metabolism and protein degradation as major pathways affected in livers of mice treated with ibuprofen. *Sci. Rep.* 10: 3386.
5. Yun, Y.R., et al. 2021. Sensitive electrochemical immunosensor to detect prohibitin 2, a potential blood cancer biomarker. *Talanta* 238: 123053.

## RESEARCH USE

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