

# protein 4.2 (G-12): sc-132051

## BACKGROUND

protein 4.2, also known as erythrocyte membrane protein band 4.2, is a 691 amino acid transmembrane protein, which possibly regulates mechanical and morphological properties of erythrocytes. protein 4.2 functions to strongly influence CD47 levels and also regulate the association between ankyrin and protein 3. Appearing on erythroblasts at a very late stage of red blood cell development, protein 4.2 is predominantly found in liver and is also expressed in spleen, stomach, testis and eye. One of several members of the transglutaminase family, protein 4.2 is subject to a loss of function caused by an amino acid substitution from Cys to Ala in the active site. Complete or partial protein 4.2 absence leads to a weaker than usual association of ankyrin to the membrane skeleton. Defects in the gene encoding protein 4.2 are the cause of hereditary spherocytosis, a hematologic disorder characterized by abnormally shaped erythrocytes and chronic hemolytic anemia. A short and long isoform of protein 4.2 exist as a result of an alternative splicing event. The short isoform is characterized as the major protein 4.2 species in human erythrocyte membranes.

## REFERENCES

1. Sung, L.A., et al. 1992. Human erythrocyte protein 4.2: isoform expression, differential splicing, and chromosomal assignment. *Blood* 79: 2763-2770.
2. Zhu, L., et al. 1998. Developmental expression of mouse erythrocyte protein 4.2 mRNA: evidence for specific expression in erythroid cells. *Blood* 91: 695-705.
3. Mouro-Chanteloup, I., et al. 2003. Evidence that the red cell skeleton protein 4.2 interacts with the Rh membrane complex member CD47. *Blood* 101: 338-344.
4. Dahl, K.N., et al. 2004. Protein 4.2 is critical to CD47-membrane skeleton attachment in human red cells. *Blood* 103: 1131-1136.
5. Toye, A.M., et al. 2005. Protein-4.2 association with band 3 (AE1, SLCA4) in *Xenopus* oocytes: effects of three natural protein 4.2 mutations associated with hemolytic anemia. *Blood* 105: 4088-4095.
6. Remus, R., et al. 2005. Relationships between DNA methylation and expression in erythrocyte membrane protein (band 3, protein 4.2, and  $\beta$ -spectrin) genes during human erythroid development and differentiation. *Int. J. Hematol.* 82: 422-429.
7. Su, Y., et al. 2006. Associations of protein 4.2 with band 3 and ankyrin. *Mol. Cell. Biochem.* 289: 159-166.
8. Su, Y., et al. 2007. Protein 4.2 Komatsu (D175Y) associated with the lack of interaction with ankyrin in human red blood cells. *Blood Cells Mol. Dis.* 38: 221-228.

## CHROMOSOMAL LOCATION

Genetic locus: Epb4.2 (mouse) mapping to 2 E5.

## SOURCE

protein 4.2 (G-12) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of protein 4.2 of mouse origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-132051 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

protein 4.2 (G-12) is recommended for detection of protein 4.2 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

protein 4.2 (G-12) is also recommended for detection of protein 4.2 in additional species, including equine and porcine.

Molecular Weight of protein 4.2 short isoform: 72 kDa.

Molecular Weight of protein 4.2 long isoform: 75 kDa.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## STORAGE

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

## RESEARCH USE

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

## PROTOCOLS

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