

# Hemoglobin $\beta$ (M-19): sc-31116

## BACKGROUND

Hemoglobin (Hgb) is coupled to four iron-binding, methene-linked tetrapyrrole rings (heme). The  $\alpha$  (16p13.3; 5'- $\zeta$ -pseudoz-pseudo  $\alpha$ 2-pseudo  $\alpha$ 1- $\alpha$ 2- $\alpha$ 1- $\alpha$ 1-3') and  $\beta$  (11p15.5) globin loci determine the basic hemoglobin structure. The globin portion of hemoglobin consists of two  $\alpha$  chains and two  $\beta$  chains arranged in pairs forming a tetramer. Each of the four globin chains covalently associates with a heme group. The bonds between  $\alpha$  and  $\beta$  chains are weaker than between similar globin chains, thereby forming a cleavage plane that is important for oxygen binding and release. High affinity for oxygen occurs upon relaxation of the  $\alpha$ 1- $\beta$ 2 cleavage plane. When the two  $\alpha$ 1- $\beta$ 2 interfaces are closely bound, hemoglobin has a low affinity for oxygen. Hb A, which contains two  $\alpha$  chains plus two  $\beta$  chains, comprises 97% of total circulating hemoglobin. The remaining 3% of total circulating hemoglobin is comprised of Hb A-2, which consists of two  $\alpha$  chains plus two  $\delta$  chains, and fetal hemoglobin (Hb F), which consists of two  $\alpha$  chains together with two  $\gamma$  chains.

## REFERENCES

- Liebhaber, S.A., et al. 1981. Homology and concerted evolution at the  $\alpha$ 1 and  $\alpha$ 2 loci of human  $\alpha$ -globin. *Nature* 290: 26-29.
- Goodbourn, S.E., et al. 1983. Molecular basis of length polymorphism in the human  $\zeta$ -globin gene complex. *Proc. Natl. Acad. Sci. USA* 80: 5022-5026.
- Giardina, B., et al. 1995. The multiple functions of hemoglobin. *Crit. Rev. Biochem. Mol. Biol.* 30: 165-196.
- Adachi, K., et al. 2002. Assembly of human hemoglobin (Hb)  $\beta$ - and  $\gamma$ -globin chains expressed in a cell-free system with  $\alpha$ -globin chains to form Hb A and Hb F. *J. Biol. Chem.* 277: 13415-13420.
- Feng, L., et al. 2004. Molecular mechanism of AHSP-mediated stabilization of  $\alpha$ -hemoglobin. *Cell* 119: 629-640.
- Sudha, R., et al. 2004. Linkage of interactions in sickle hemoglobin fiber assembly: inhibitory effect emanating from mutations in the AB region of the  $\alpha$ -chain is annulled by a mutation at its EF corner. *J. Biol. Chem.* 279: 20018-20027.

## CHROMOSOMAL LOCATION

Genetic locus: Hbb-b2 (mouse) mapping to 7 E3.

## SOURCE

Hemoglobin  $\beta$  (M-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Hemoglobin  $\beta$  of mouse origin.

## 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) or our catalog for detailed protocols and support products.

## 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-31116 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

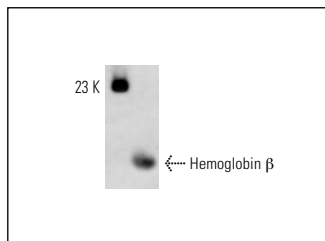
Hemoglobin  $\beta$  (M-19) is recommended for detection of Hemoglobin  $\beta$  of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Hemoglobin  $\beta$  siRNA (m): sc-35559, Hemoglobin  $\beta$  shRNA Plasmid (m): sc-35559-SH and Hemoglobin  $\beta$  shRNA (m) Lentiviral Particles: sc-35559-V.

Molecular Weight of Hemoglobin  $\beta$ : 16 kDa.

Positive Controls: rat PBL whole cell lysate.

## DATA



Hemoglobin  $\beta$  (M-19): sc-31116. Western blot analysis of Hemoglobin  $\beta$  expression in rat PBL whole cell lysate.

## SELECT PRODUCT CITATIONS

- Voon, H.P., et al. 2008. siRNA-mediated reduction of  $\alpha$ -globin results in phenotypic improvements in  $\beta$ -thalassemic cells. *Haematologica* 93: 1238-1242.
- Richter, F., et al. 2009. Neurons express hemoglobin  $\alpha$ - and  $\beta$ -chains in rat and human brains. *J. Comp. Neurol.* 515: 538-547.
- Eung-Yoon, Kim., et al. 2010. Biomarker analysis of rat livers exposed to different toxic pollutants (VOCs and PAHs) using an antibody array. *BioChip J.* 4: 173-178.
- Maher, P., et al. 2011. Fisetin lowers methylglyoxal dependent protein glycation and limits the complications of diabetes. *PLoS ONE* 6: e21226.
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## RESEARCH USE

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