

# Hemoglobin $\gamma$ (B-4): sc-377395

## BACKGROUND

Hemoglobin (Hgb) is coupled to four iron-binding, methene-linked tetrapyrrole rings (heme). The  $\alpha$  (16p13.3; 5'- $\zeta$ -pseudo $\zeta$ -pseudo  $\alpha$ 2-pseudo  $\alpha$ 1- $\alpha$ 2- $\alpha$ 1- $\theta$ 1-3') and  $\beta$  (11p15.5) globin loci determine the basic Hgb structure. The globin portion of Hgb 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, Hgb 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 two  $\gamma$  chains.

## REFERENCES

- Liebhaver, 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.
- Baudin-Creuz, V., et al. 2004. Transfer of human  $\alpha$ - to  $\beta$ -hemoglobin via its chaperone protein: evidence for a new state. *J. Biol. Chem.* 279: 36530-36533.

## CHROMOSOMAL LOCATION

Genetic locus: HBG1 (human) mapping to 11p15.4.

## SOURCE

Hemoglobin  $\gamma$  (B-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 9-43 near the N-terminus of Hemoglobin  $\gamma$  of human origin.

## STORAGE

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

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>3</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-377395 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

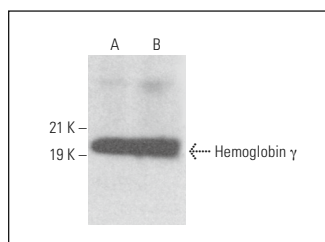
Hemoglobin  $\gamma$  (B-4) is recommended for detection of Hemoglobin  $\gamma$  of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 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  $\gamma$  siRNA (h): sc-37108, Hemoglobin  $\gamma$  shRNA Plasmid (h): sc-37108-SH and Hemoglobin  $\gamma$  shRNA (h) Lentiviral Particles: sc-37108-V.

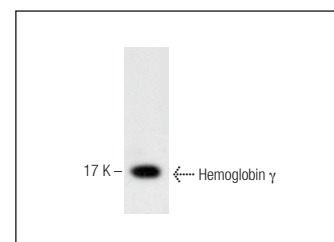
Molecular Weight of Hemoglobin  $\gamma$ : 18 kDa.

Positive Controls: human placenta extract: sc-363772, HEL 92.1.7 cell lysate: sc-2270 or TF-1 cell lysate: sc-2412.

## DATA



Hemoglobin  $\gamma$  (B-4): sc-377395. Western blot analysis of Hemoglobin  $\gamma$  expression in human placenta (A) and human fetal heart (B) tissue extracts.



Hemoglobin  $\gamma$  (B-4): sc-377395. Western blot analysis of Hemoglobin  $\gamma$  expression in HEL 92.1.7 whole cell lysate.

## 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) for detailed protocols and support products.



See **Hemoglobin  $\beta/\gamma/\delta/\epsilon$  (A-8): sc-390668** for Hemoglobin  $\beta/\gamma/\delta/\epsilon$  antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.