

# Hemoglobin $\gamma$ (51-7): sc-21756

## 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 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 2  $\alpha$  chains plus 2  $\delta$  chains, and fetal hemoglobin (Hb F), which consists of 2  $\alpha$  chains together with 2  $\gamma$  chains.

## CHROMOSOMAL LOCATION

Genetic locus: HBG2/HBG1 (human) mapping to 11p15.4.

## SOURCE

Hemoglobin  $\gamma$  (51-7) is a mouse monoclonal antibody raised against human hemoglobin.

## PRODUCT

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

Hemoglobin  $\gamma$  (51-7) is available conjugated to agarose (sc-21756 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-21756 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-21756 PE), fluorescein (sc-21756 FITC), Alexa Fluor<sup>®</sup> 488 (sc-21756 AF488), Alexa Fluor<sup>®</sup> 546 (sc-21756 AF546), Alexa Fluor<sup>®</sup> 594 (sc-21756 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-21756 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-21756 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-21756 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## APPLICATIONS

Hemoglobin  $\gamma$  (51-7) is recommended for detection of Hemoglobin  $\gamma$  of human 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1  $\mu$ g per 1 x 10<sup>6</sup> cells).

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.

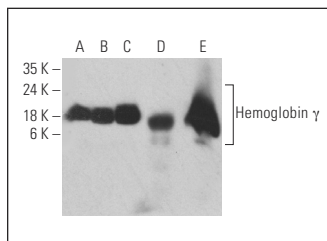
Molecular Weight of Hemoglobin  $\gamma$ : 18 kDa.

Positive Controls: human prostate extract: sc-363774, HEL 92.1.7 cell lysate: sc-2270 or TF-1 cell lysate: sc-2412.

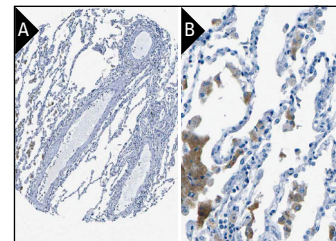
## STORAGE

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

## DATA



Hemoglobin  $\gamma$  (51-7) HRP: sc-21756 HRP. Direct western blot analysis of Hemoglobin  $\gamma$  expression in TF-1 (A), MEG-01 (B) and HEL 92.1.7 (C) whole cell lysates and human PBL (D) and human placenta (E) tissue extracts.



Hemoglobin  $\gamma$  (51-7): sc-21756. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lung tissue showing cytoplasmic staining of macrophages at low (A) and high (B) magnification. Kindly provided by The Swedish Human Protein Atlas (HPA) program.

## SELECT PRODUCT CITATIONS

- Zhu, J., et al. 2007. Erythroid-specific expression of  $\beta$ -globin by the sleeping beauty transposon for Sickle cell disease. *Biochemistry* 46: 6844-6858.
- Chang, H.C., et al. 2017. Spleen tyrosine kinase mediates the actions of EPO and GM-CSF and coordinates with TGF- $\beta$  in erythropoiesis. *Biochim. Biophys. Acta* 1864: 687-696.
- Morrison, T.A., et al. 2018. A long noncoding RNA from the HBS1L-MYB intergenic region on chr6q23 regulates human fetal hemoglobin expression. *Blood Cells Mol. Dis.* 69: 1-9.
- Leung, A., et al. 2018. Notch and aryl hydrocarbon receptor signaling impact definitive hematopoiesis from human pluripotent stem cells. *Stem Cells* 36: 1004-1019.
- Melo, T.R.F., et al. 2018. Discovery of phenylsulfonylfuroxan derivatives as gamma globin inducers by histone acetylation. *Eur. J. Med. Chem.* 154: 341-353.
- Zhang, Y., et al. 2018. Metformin induces FOXO3-dependent fetal hemoglobin production in human primary erythroid cells. *Blood* 132: 321-333.
- Li, C., et al. 2018. Integrating HDA5/35<sup>++</sup> vectors as a new platform for HSC gene therapy of hemoglobinopathies. *Mol. Ther. Methods Clin. Dev.* 9: 142-152.
- Li, C., et al. 2018. HDA5/35<sup>++</sup> adenovirus vector expressing anti-CRISPR peptides decreases CRISPR/Cas9 toxicity in human hematopoietic stem cells. *Mol. Ther. Methods Clin. Dev.* 9: 390-401.
- Shen, Y., et al. 2018. Identification of a novel enhancer/chromatin opening element associated with high-level  $\gamma$ -globin gene expression. *Mol. Cell Biol.* pii: MCB.00197-18.

## RESEARCH USE

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