SANTA CRUZ BIOTECHNOLOGY, INC.

# Hemoglobin α (D-4): sc-514378

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

Hemoglobin (Hgb) is coupled to four iron-binding, methene-linked tetrapyrrole rings (heme). The α (16p13.3; 5'-ζ-pseudoζ-pseudoα2-pseudoα1-α2-α1-θ1-3') and β (11p15.5) globin loci determine the basic Hgb structure. The globin portion of Hgb consists of two α chains and two β chains arranged in pairs forming a tetramer. Each of the four globin chains covalently associates with a heme group. The bonds between α and β 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 α1-β2 cleavage plane. When the two α1-β2 interfaces are closely bound, Hgb has a low affinity for oxygen. Hb A, which contains two α chains plus two β chains, comprises 97% of total circulating hemoglobin. The remaining 3% of total circulating hemoglobin is comprised of Hb A-2, which consists of two α chains plus two δ chains, and fetal hemoglobin (Hb F), which consists of two α chains together with two γ chains.

## CHROMOSOMAL LOCATION

Genetic locus: HBA1/HBA2 (human) mapping to 16p13.3.

## SOURCE

Hemoglobin α (D-4) is a mouse monoclonal antibody raised against amino acids 62-142 of Hemoglobin α of human origin.

## PRODUCT

Each vial contains 200 µg $IgG_1$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Hemoglobin α (D-4) is available conjugated to agarose (sc-514378 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-514378 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514378 PE), fluorescein (sc-514378 FITC), Alexa Fluor® 488 (sc-514378 AF488), Alexa Fluor® 546 (sc-514378 AF546), Alexa Fluor® 594 (sc-514378 AF594) or Alexa Fluor® 647 (sc-514378 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514378 AF680) or Alexa Fluor® 790 (sc-514378 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.



## APPLICATIONS

Hemoglobin α (D-4) is recommended for detection of Hemoglobin α of 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Hemoglobin α siRNA (h): sc-41230, Hemoglobin α shRNA Plasmid (h): sc-41230-SH and Hemoglobin α shRNA (h) Lentiviral Particles: sc-41230-V.

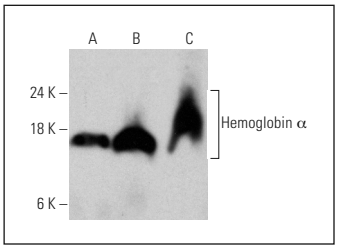
Molecular Weight of Hemoglobin α: 16 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, HEL 92.1.7 cell lysate: sc-2270 or human plasma extract: sc-364374.

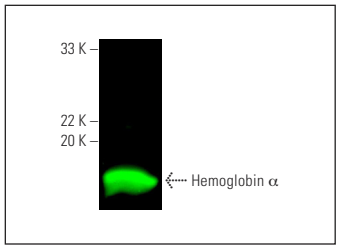
## STORAGE

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

## DATA




Hemoglobin α (D-4) HRP: sc-514378 HRP. Direct western blot analysis of Hemoglobin α expression in K-562 (**A**) and HEL 92.1.7 (**B**) whole cell lysates and human plasma (**C**).




Hemoglobin α (D-4) Alexa Fluor® 680: sc-514378 AF680. Direct near-infrared western blot analysis of Hemoglobin α expression in human PBL whole cell lysate. Blocked with UltraCruz® Blocking Reagent: sc-516214.

## SELECT PRODUCT CITATIONS

1. Chen-Roetling, J., et al. 2018. Hemopexin increases the neurotoxicity of hemoglobin when haptoglobin is absent. J. Neurochem. 145: 464-473.
2. Daniels, D.E., et al. 2020. Comparing the two leading erythroid lines BEL-A and HUDEP-2. Haematologica 105: e389-e394.
3. Ashley, R.J., et al. 2020. Steroid-resistance in Diamond Blackfan anemia associates with $p57^{Kip2}$ dysregulation in erythroid progenitors. J. Clin. Invest. 130: 2097-2110.
4. El Hoss, S., et al. 2021. Fetal hemoglobin rescues ineffective erythropoiesis in sickle cell disease. Haematologica 106: 2707-2719.
5. Deen, D., et al. 2021. Identification of the transcription factor MAZ as a regulator of erythropoiesis. Blood Adv. 5: 3002-3015.
6. Shan, L., et al. 2021. Increased hemoglobin and heme in MALDI-TOF MS analysis induce ferroptosis and promote degeneration of herniated human nucleus pulposus. Mol. Med. 27: 103.
7. Han, G., et al. 2022. Nrf2 expands the intracellular pool of the chaperone AHSP in a cellular model of β-thalassemia. Redox Biol. 50: 102239.
8. Jayasinghe, M.K., et al. 2022. Surface-engineered extracellular vesicles for targeted delivery of therapeutic RNAs and peptides for cancer therapy. Theranostics 12: 3288-3315.
9. Piantanida, N., et al. 2022. Deficiency of ribosomal protein S26, which is mutated in a subset of patients with Diamond Blackfan anemia, impairs erythroid differentiation. Front. Genet. 13: 1045236.

## RESEARCH USE

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

## PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.