

## Hemoglobin beta S antibody

**Cat#: orb420236 (Datasheet)**

### Overview

**Description:** Anti-HbS (MOUSE) Monoclonal Antibody

**Size:** 100 µg

**Applications:** ELISA, SDS-PAGE, WB, FC, LFA

**Reactivity:** Human

**Host Species:** Mouse

### Product Details

**Background:** HbS antibodies detect the E6V mutant in the hemoglobin beta subunit. Functional adult hemoglobin (Hb) is a hetero tetramer composed of 2 alpha and 2 beta subunits ( $\alpha_2\beta_2$ ). Common isoform variants of hemoglobin include HbA, HbS, HbC, HbF, and HbA2. Hemoglobin S is the predominant hemoglobin in people with sickle cell disease. The alpha chain is normal. The disease-producing mutation exists in the beta chain, giving the molecule the structure,  $\alpha_2\beta^S_2$ . People who have one sickle mutant gene and one normal beta gene have sickle cell trait which is benign. Globin gene mutations affect the structure and expression levels of Hb. Sickle cell disease and the more benign sickle cell trait are observed in more than 100 million people globally. Perhaps the most significant mutation is the E6V in the beta subunit and the cause of SCD, but other relevant isoforms of Hb are observed. HbS antibody does not react to other forms of Hb. This antibody is ideal for investigators involved in Cardiovascular and developmental biology research.

**Synonyms:** mouse anti-HbS antibody, mouse anti-hemoglobin antibody, Hemoglobin beta subunit sickle mutant, HBS, HBBs, HbS Antibody, Sickle Cell Disease (SCD)

**Host Species:** Mouse

**Clonality:** Monoclonal

**Clone ID:** 23E5.H6.G6.C1.H7.F7.G9.F6

### Target Details

**Gene Name:** HbBs

**Reactivity:** Human

**Immunogen Type:** Peptide

**Immunogen:** Anti-Hemoglobin beta S Monoclonal Antibody was produced in mice by repeated immunizations with synthetic peptide corresponding to amino acid residues near the N-terminus of Hb  $\beta$ -subunit conjugated to KLH.

**Purity/Specificity:** This protein A purified mouse monoclonal antibody reacts specifically with human HbS beta sickle isoform. Anti-HbS is purified from tissue culture supernatant by protein A purification. Blast analysis shows 100% homology to Human, Pan troglodytes, Pan paniscus, Gorilla gorilla gorilla, and Hylobates lar. This antibody does not react with the HbA, HbF, HbC, or HbA-2 isoform.

**Relevant Links:** • UniProtKB - P68871

**Application Details**

**Tested Applications:** ELISA, SDS-PAGE, WB

**Suggested Applications:** FC, LFA (Based on references)

**Application Note:** Anti-Hemoglobin beta S (MOUSE) antibody has been tested by ELISA, SDS-Page, and western blot. This antibody is designed for use in lateral flow. Specific conditions of reactivity should be optimized by the end user. Expect a band of approximately 16 kDa in appropriate lysates.

**Assay Dilutions:** All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.

**ELISA:** 1:20,000

**WB:** 1ug/mL

**Formulation**

**Physical State:** Liquid (sterile filtered)

**Concentration:** 1.00 mg/ml by UV absorbance at 280 nm

**Buffer:** 0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2

**Preservative:** 0.01% (w/v) Sodium Azide

**Stabilizer:** None

**Shipping & Handling**

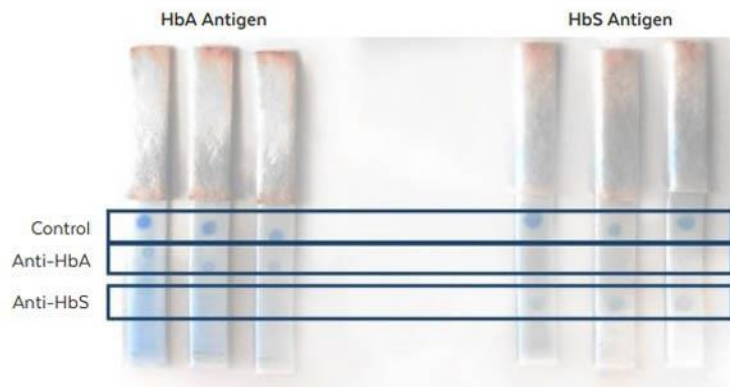
**Shipping Condition:** Dry Ice

**Storage Condition:** Store vial at -20° C prior to opening. This product is stable at 4° C as an undiluted liquid. For extended storage, aliquot contents and freeze at -20° C or below. Avoid cycles of freezing and thawing. Dilute only prior to immediate use.

**Expiration:** Expiration date is one (1) year from date of receipt.

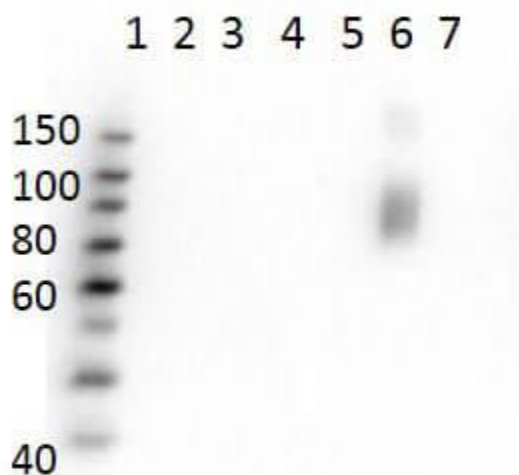
**Images**

**Lateral Flow**

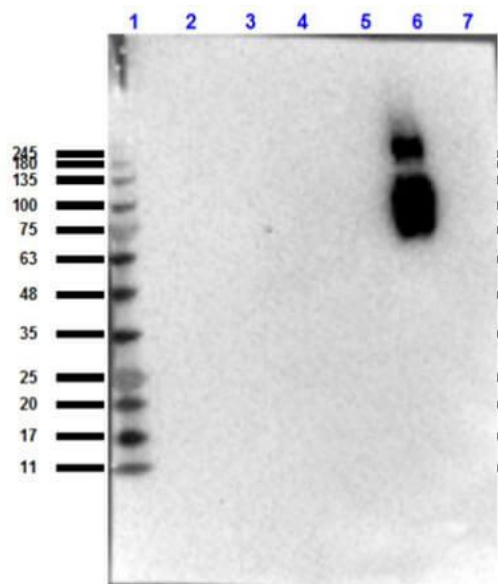


Lateral Flow Results of Anti-HbA (Hemoglobin A) and Anti-HbS (Hemoglobin beta S) Antibodies. Triplicate test strips are spotted with a control, Anti-HbA antibody 0.5 $\mu$ L at 250 $\mu$ g/mL, and Anti-HbS antibody 0.5 $\mu$ L at 1mg/mL. Recombinant HbA (left group) or recombinant HbS (right group) are observed to react with the corresponding antibodies specifically, leading to blue dots. Image courtesy of team SickLED advised by Professors Xuanhong Cheng and Khanjan Mehta of Lehigh University, Bethlehem, Pennsylvania, USA.

**Western Blot**



Western Blot of Mouse Anti-Hemoglobin beta S Antibody. Lane 1: Molecular Weight Ladder. Lane 2: HbA peptide conjugated to BSA. Lane 3: HbA-2 peptide conjugated to BSA. Lane 4: HbC peptide conjugated to BSA. Lane 5: HbF peptide conjugated to BSA. Lane 6: HbS peptide conjugated to BSA. Lane 7: BSA alone. Load: 50ng per lane. Primary antibody: Anti-HbS antibody at 1 $\mu$ g/mL overnight at 4 $^{\circ}$ C. Secondary antibody: Rabbit Anti-Mouse secondary antibody at 1:40,000 for 30 min at RT. Block: 30 min RT. Predicted/Observed: Reactivity seen in Lane 6 specific to HbS only.

**Western Blot**

Western blot results of Mouse Anti-HbS Antibody. Lane 1: Opal Prestained molecular weight ladder Lane 2: HbA. Lane 3: HbA2. Lane 4: HbC. Lane 5: HbF. Lane 6: HbS. Lane 7: BSA. Loaded 10ug. Blocking: Block Out Universal buffer for 30 min at RT. Primary Antibody: Anti- Hemoglobin beta S at 1:1000 overnight at 4°C. Secondary Antibody: Rabbit Anti-Mouse HRP at 1:40,000 for 30 min at RT.

**References**

- Chen A et al. Reducing Child Mortality in Sierra Leone with a Sustainable Diagnostics Device for Sickle Cell Disease. *1<sup>st</sup> International Academic Conference on "WHY IT MATTERS"*. (2022)
- Magrin E et al. Long-term outcomes of lentiviral gene therapy for the  $\beta$ -hemoglobinopathies: the HGB-205 trial. *Nature Medicine* (2022)
- Lancia M et al. A Novel E-Junction Lateral Flow Immunoassay for Widespread Sickle Cell Screening in Low and Middle - Income Countries. *IEEE Global Humanitarian Technology Conference (GHTC)*. (2020)