

HBB GENE SEQUENCING ANALYSIS

Patient ID	XXX	Gender	NA	Location	XXX
Patient Name	Dummy	Clinician Name	XXX	Sample Collected	08-02-2024
Patient DOB	24-07-1992	GA/LMP Date	05-10-2023	Sample Received	09-02-2024
Age	31 Years	Hospital Name	NA	Report Released	15-01-2024

Test Requested:- HBB Gene Sequencing Trio Sample Type:-Amniotic Fluid Sample Quality:- Acceptable

RESULT >>

Sample	Variant Detected	Genotype	Allele Status	Clinical Significance
Dummy	HBB:c.20A>T	HbS	Heterozygous	Sickle Cell Trait
XXX Verma	HBB:c.20A>T	HbS	Heterozygous	Sickle Cell Trait
AF of XXX Verma	HBB:c.20A>T	HbS	Heterozygous	Sickle Cell Trait

RECOMMENDATION >>

Kindly correlate the results with other clinical findings and Genetic counseling is recommended to understand the inheritance and risk of disease occurrence in future generations.

INTERPRETATION >>

Variant c.20A>T is present in Dummy and XXX in Heterozygous state and the disease indication is Sickle Cell Trait.

Variant c.20A>T is present in AF of Dummy in Heterozygous state and the disease indication is Sickle Cell Trait.

Note: No significant maternal cell contamination is detected in AF of Dummy.

Maternal cell contamination (MCC) was ruled out using STR markers

TECHNOLOGY >>

Sanger sequencing based DNA analysis was performed to identify the mutations in the coding regions and reported mutations in the non-coding regions of β Globin gene (HBB). DNA was isolated from the sample received using a commercial kit that works on the silica- membrane- based DNA purification. Mutation surveyor software V5.1.1 is used for identifying the mutations and the identified sequence alterations are reported in accordance with the Human Genome Variants Society (HGVS) nomenclature and annotated using one or more of the following database/s- ClinVar, OMIM, HGMD and SwissVar.

UNDERSTANDING THE RESULTS: >>>

Mutation Type	Possible Genotype*	Clinical Significance#
β^+ type	$\beta^+ \beta^+$ $\beta^+ \beta^0$ $\beta^+ \beta$ $\beta \beta$	Thalassemia Intermedia / Major Thalassemia Major Thalassemia Minor Normal
β^0 type	$\beta^0 \beta^0$ $\beta^+ \beta^0$ $\beta^0 \beta$ $\beta \beta$	Thalassemia Major Thalassemia Major Thalassemia Minor Normal

* β type- Normal functional haemoglobin, β^+ type Mutation: Reduced ability to produce β Globin protein with reduced functional capacity for hemoglobin, β^0 type mutation: No β Globin will be produced and dysfunctional haemoglobin.

#Thalassemia minor: Patient with one normal copy of the β -Globin gene and may show mild to no symptoms for Thalassemia, Thalassemia major: Patient with both abnormal copies of the β Globin gene and may show acute symptoms for Thalassemia, Thalassemia intermedia- Patient with both abnormal copies of the β Globin gene and may show acute symptoms for Thalassemia at adult stage.

DISCLAIMER: >>>

This test does not distinguish between the alleles present in cis and trans forms. Classification of haemoglobin disorders by genetic data alone may result in incomplete conclusions which may significantly impact overall disorder classification and expected phenotype. The test results does not mean that the risk of carrying or developing Thalassemia/sickle cell anemia is not present and or caused by other known or unknown variations in the genome. Correlation with haemoglobin electrophoresis, red blood cell indices and clinical/family history is required. Limitations: This test will detect greater than 99% of variants in HBB gene excluding large insertions and deletions, which may be a rare phenomenon. Any change in primer binding site can result can interfere with the results and allele dropout cannot be ruled out using this experiment. Benign variants will be provided upon request. The current assay doesn't detect the delta beta inversion deletion mutation or any other mutation on Delta, Gamma and Alpha gene.

As per the PRE-NATAL DIAGNOSTIC TECHNIQUES (REGULATIONS & PREVENTION OF MISUSE) AMENDMENT ACT 2002, sex determination shall not be done for all prenatal samples

REFERENCE >>>

Colah R, Gorakshakar A, Nadkarni A, Phanasgaonkar S, Surve R, Sawant P, Mohanty D, Ghosh K (2009) Regional heterogeneity of bthalassemia mutations in the multi ethnic Indian population. Blood Cells Mol Dis 42:241–246.

Edison ES, Shaji RV, Devi SG, Moses A, Viswabandhya A, Matthews V, George B, Srivastava A,Chandy M (2008) Analysis of b globin mutations in the Indian population: presence of rare and novel mutations and region-wise heterogeneity. ClinGenet 73:331–337.

<http://globin.bx.psu.edu/hbvar/menu.html>

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Disclaimer: Method given in report are only indicative and can be changed depending upon type of machine and kit available at time of testing.

Not all tests at all locations are under NABL scope. Availability of tests under NABL scope varies from lab to lab.