SagePath®
Excellence In Health Care

Department of Molecular Genetics & Genomics

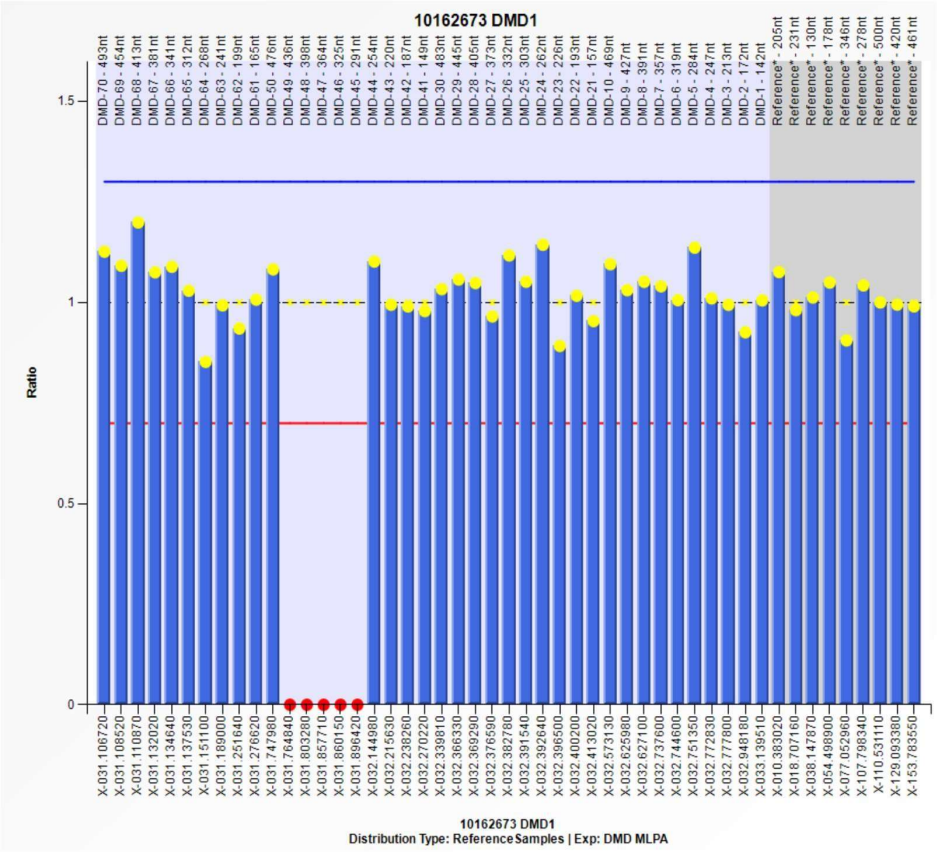
Patient information	
Patient Name:	Mr.Prabhas kumar

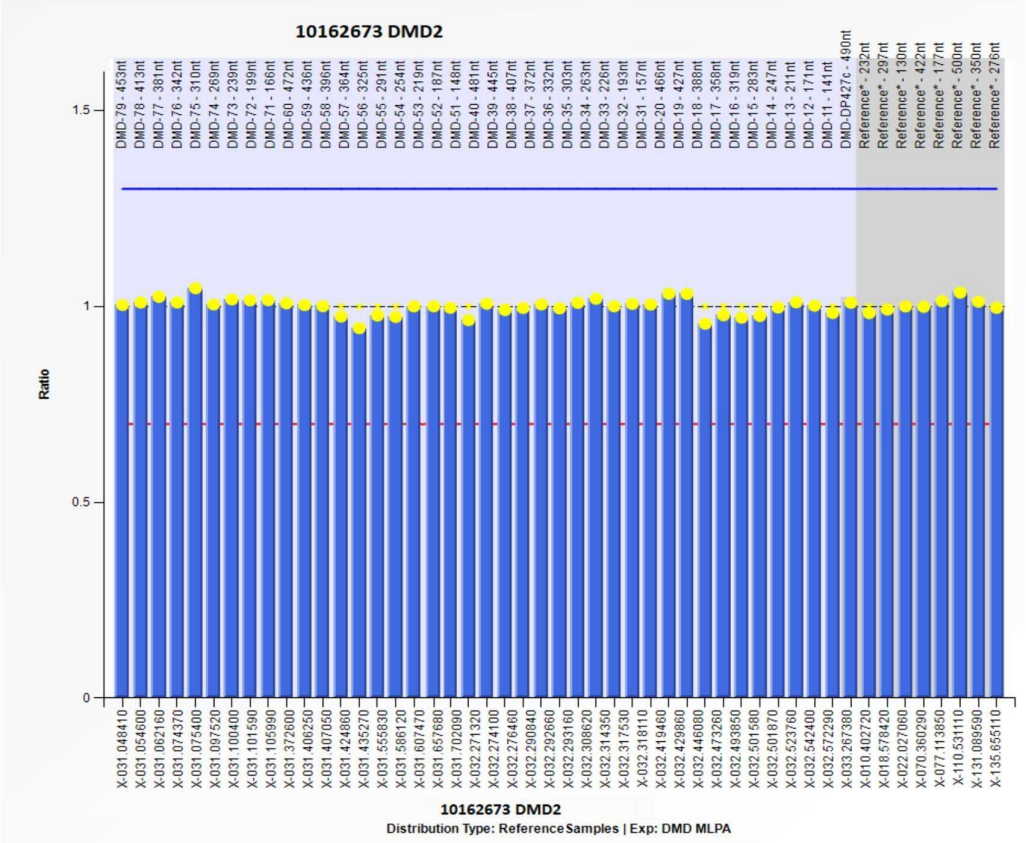
Referral Reason: Clinical suspicion for DMD/BMD.

Test Result: **Hemizygous deletion of exons 45 - 49 detected in the DMD gene of this individual.**

Interpretation: The presence of hemizygous deletion of exons 45-49 in DMD gene is consistent with the diagnosis for Becker muscular dystrophy ***(BMD).***

Probe distribution ratio for 10162673





Recommendations:

- Genetic Counselling and clinical correlation is recommended

Methodology:

Multiplex Ligation-dependent probe amplification (MLPA) method is used for detection of deletion and duplication in 79 exons on DMD gene using SALSA MLPA probe mix available from MRC (Holland). Coffalyser.Net software is used for data analysis. The exon numbering used in this P034-B2 DMD-1 and P035-B1 DMD-2 product description is the exon numbering from the RefSeq transcript NM_004006.2, whichis identical to the LRG_199 sequence.

Introduction to DMD/BMD:

Muscular dystrophies are a group of genetic conditions characterized by progressive muscle weakness and wasting (atrophy). The Duchenne and Becker types of muscular dystrophy are two related conditions that primarily affect skeletal muscles, which are used for movement, and heart (cardiac) muscle. These forms of muscular dystrophy occur almost exclusively in males.

Duchenne and Becker muscular dystrophies have similar signs and symptoms and are caused by different mutations in the same gene. The two conditions differ in their severity, age of onset, and rate of progression. In boys with Duchenne muscular dystrophy, muscle weakness tends to appear in early childhood and worsen rapidly. Affected children may have delayed motor skills, such as sitting, standing, and walking. The signs and symptoms of Becker muscular dystrophy are usually milder and more varied. In most cases, muscle weakness becomes apparent later in childhood or in adolescence and worsens at a much slower rate.

Both the Duchenne and Becker forms of muscular dystrophy are associated with a heart condition called dilated cardiomyopathy. Signs and symptoms of dilated cardiomyopathy can include an irregular heartbeat (arrhythmia), shortness of breath, extreme tiredness (fatigue), and feet. Mutations in the *DMD* gene cause the Duchenne and Becker forms of muscular dystrophy which provides instructions for making a protein called dystrophin, located primarily in skeletal and cardiac muscle.

Incidence: DMD: 1 in 3,500 male births
Inheritance: X-linked; de novo mutations occur in one-third of cases.
Penetrance: Males: 100 percent. Females: Varies with X-chromosome inactivation.
Cause: Pathogenic DMD mutations.
Clinical Sensitivity: DMD: 55-75 percent, BMD: 75-90 percent.

Limitations: *DMD* base pair substitutions, small deletions/duplications, deep intronic, and regulatory region mutations will not be detected. Breakpoints for large deletions/duplications will not be determined. Diagnostic errors can occur due to rare sequence variation.

Disclaimer:

- Test results should be interpreted in the context of clinical findings, family history, and other laboratory data. Errors in our interpretation of results may occur if information given is inaccurate or incomplete.
- This test doesn't detect SNPs in the DMD gene.
- Although all precautions are taken while conducting these tests, there is a standard error rate of approximate 1% in all genetic tests and this should be taken into consideration before any clinical decision.
- It is presumed that the specimen used to perform the test belongs to the patient specified above, such verification having been carried out at the collection level of sample.
- Diagnostic errors can occur due to rare sequence variations. Regulatory region mutations, large gene deletions/duplications and some deep intronic mutations will not be detected.

References:

1. *Katharina J Hoff (2009): The effect of sequencing errors on metagenomic gene prediction.* BMCGenomics*, 10:520.*

2. *Hoffman, E. P. et al. Characterization of dystrophin in muscle-biopsy specimens from patients with Duchenne's or Becker's muscular dystrophy. N. Engl. J. Med. (1988). doi:10.1056/NEJM198805263182104*

3. Muntoni F. et al. (1993). Deletion of the Dystrophin Muscle-Promotor region associated with X- linked dilated cardiomyopathy. N EnglJ Med 329:921-925.

4. Dastur RS et al. (2011). Identification of deletions and duplications in the DMD gene and female carrier status in western India using combined methods of multiplex polymerase chain reaction and multiplex ligation-dependent probe amplification. Neurol India 59:803-809.

5. McKusick V.A., Mendelian Inheritance in Man. A Catalog of Human Genes and Genetic Disorders. Baltimore: Johns Hopkins University Press (12th edition), 1998

----------END OF REPORT---------

A. Radhika	Dr Naushad SM	Dr. Kiran Kumar
Co-Head Genomics	Chief Scientific Officer	Consultant Genomics