Jordan University of Science and Technology

Rapid and cost effective detection of small mutations in the DMD gene by high resolution melting curve analysis.

Authors: **Almomani R**, van der Stoep N, Bakker E, den Dunnen JT, Breuning MH, Ginjaar IB.

Abstract: Duchenne/Becker muscular dystrophy (DMD/BMD) is caused by large deletions or duplications in two-thirds of the cases. The remaining one-third DMD patients have small mutations in the DMD gene. Screening for such small mutations is a daunting and costly task. High resolution melting curve analysis (HR-MCA) followed by sequencing for amplicons with altered melting profiles can be used to scan DNA for small alterations . We first validated the technique as screening procedure for the DMD gene and then screened a group of unrelated 22 DMD/BMD patients and 11 females. We managed to identify all previously found mutations by means of HR-MCA, which provided its validation. Furthermore, 17 different pathogenic mutations were found in the screening group, of which 10 were novel. Our results provide validation of HR- MCA as a powerful and inexpensive pre-sequencing scanning method. This technology is now ready for routine diagnostic use on DMD/BMD patients and female carriers.