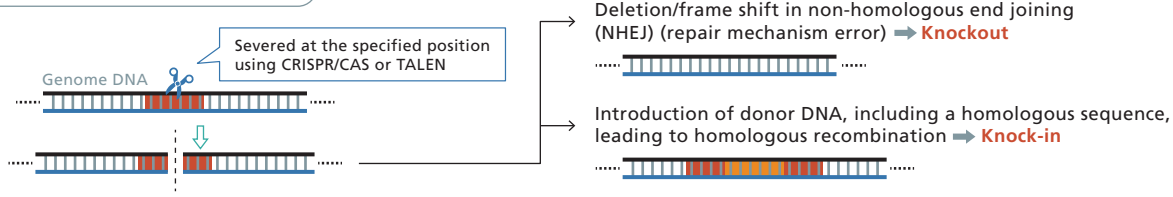
MCE-202 MultiNA Microchip Electrophoresis System for DNA/RNA Analysis Confirming Genome Editing by CRISPR/CAS, and TALEN*

The emergence of genome editing tools such as CRISPR/CAS and TALEN has allowed the simpler deletion and insertion of sequences. Post-editing confirmation by DNA sequencing, however, has been problematic costing both time and money. The following is an example of an extremely simple procedure using the MCE-202 MultiNA Microchip Electrophoresis System for DNA/RNA analysis, which confirms the presence or otherwise of deletion or insertion in the target gene.

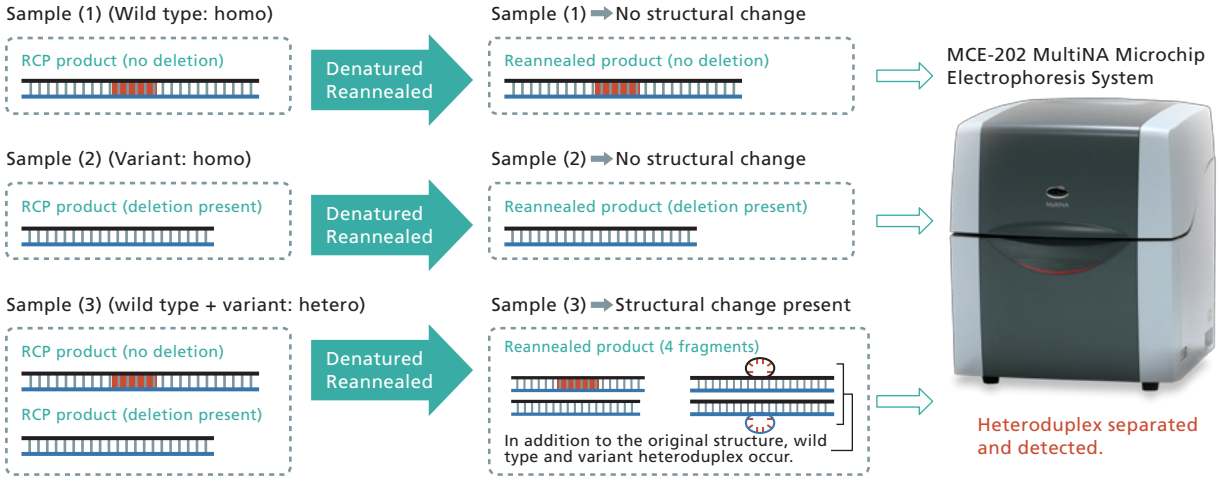
Genome Editing Using Artificial Nuclease



MultiNA Allows Detection of Even Short Deletions after Genome Editing

Analysis Principles/Method

Subsequent to genome editing, the area including the deleted part is amplified by PCR. As shown below, the amplification product is denatured and then reannealed to form a heteroduplex. The structural change results in a different migration pattern, which is measured by the MultiNA to confirm the presence of the deletion. This method has the additional advantage of allowing the identification of short deletions, where chain length disparity is difficult to determine.

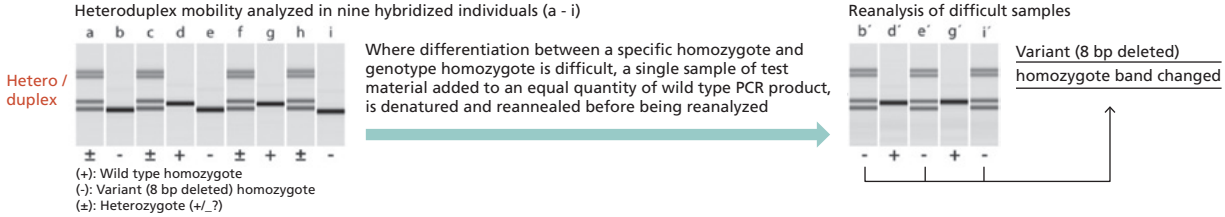


* Forcing a heteroduplex structure results in a disparity in mobility, facilitating separation.

Analysis Example

Identification of a Homo/heterozygous Variant Introduced via TALEN

Medaka Oryzias laptipes (heterovariant) was hybridized with a TALEN-introduced variant (with 8 bp deleted). PCR was carried out on the deletion region, then heteroduplex mobility analyzed using the MultiNA.



Using the MultiNA to analyze heteroduplex mobility allows clear identification of homo/heterozygous variants.

* Analysis method/data supplied by Masato Kinoshita, PhD, Graduate School of Agriculture, Kyoto University

References: Ansai, S. et al., Biol Open. 2014 Apr 11;3(5):362-71. (CRISPR)
Ansai, S. et al., Dev Growth Differ. 2014 Jan;56(1):98-107. (TALEN)

Total support for the genetic analysis workflow.

MCE-202 MultiNA Microchip Electrophoresis System for DNA/RNA Analysis

Excellent Analytical Performance

Microchip electrophoresis by the MultiNA achieves enhanced separation, sensitivity, reproducibility and quantitative accuracy compared with agarose gel electrophoresis.

Automated Analysis of 1 to 108 Samples

Up to 108 samples can be analyzed automatically, and though parallel processing with an analysis time of just 80 seconds per sample including pretreatment. *1

Begin Analysis in Just Three Steps

Extremely simple operation. Once the analysis schedule has been created, simply load the samples and reagents and click the Start button.

Reducing analysis cost

The low running cost is achieved using the high-performance microchip which is used for multiple samples.

*1 Analysis time using four microchips in parallel with the DNA-1000 kit, excluding initial washing to start the run.

MultiNA Reagent Kit

Reagent kits are designed to work optimally for different size ranges and sample types.

P/N: 292-27910-91 DNA-500 Kit (1000 analyses)
P/N: 292-27911-91 DNA-1000 Kit (1000 analyses)
P/N: 292-27911-91 DNA-2500 Kit (1000 analyses)
P/N: 292-36600-91 DNA-12000 Kit (1000 analyses)
P/N: 292-27913-91 RNA Kit (1000 analyses)

Microchip

The microchip is common to all reagent kits.

P/N: 292-36000-91
Part Name: MICROCHIP, TYPE WE-C

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