

Frequently Asked Questions

Mutector™ General Characteristics

Q: What is Mutector™

Mutector™ is a series of kits designed for general mutation detection in any nucleic acid sequence.

Q: What Technique Does Mutector™ Use?

The Mutector™ kit employs a unique technique called Shifted Termination Assay (STA, International patent pending). This technology is different from conventional techniques such as PCR, sequencing, and hybridization based detection methods. The STA technique is a specially designed primer extension method, which can accurately detect the presence of any type of mutation such as SNPs, insertions, deletions, and translocations.

Q: What Are the Applications of Mutector™?

Mutector™ kits can be used to identify gene mutations such as SNPs, point mutations, insertions, deletions, or translocations for RNA or DNA. Mutector™ kits can be used for mutation detection in any type of PCR product up to 200bp in length.

Q: Can Mutector™ be used to discover a Novel Mutation?

No, Mutector™ is designed to screen samples for known mutations.

Q: What is the Sensitivity of Mutector™?

Mutector™ is a multiple base primer extension technology and is more sensitive than single nucleotide extension methods. Mutector™ can detect 1% mutation DNA in a sample mixed with 99% wild type DNA, (typical clinical samples)

Q: What is the Accuracy of Mutector™?

Mutector™ is an extremely accurate technology for the detection of mutations through 3 sequence specific steps:

1. Sequence specific hybridization
2. Sequence dependent primer extension
3. Sequence dependent chain termination

Recent studies have shown that Mutector™ technology is more accurate than sequencing because of its 3-step design (see JHU B-raf clinical study, in review and soon to be published).

Mutector™ Procedural Preparation

Q: Do I Need to Run a Sequence Gel or Capillary Electrophoresis?

No, Mutector™ uses the direct reading of absorbance in the microtiter plate to identify the mutation.

Q: Do I Need to Amplify the Target?

Yes, the DNA sample needs to be amplified by PCR. Generally the PCR amplification should be accomplished with PCR primers that generate a PCR product of 80-100bp in length. This amplification will also save your important samples.

Q: Do I Need to Purify the PCR Product?

No, It is not necessary to purify the PCR product or treat it in any way. Just add the crude PCR product to the Mutector™ assay.

Q: Do I Need to Prepare a Probe?

No, the Mutector™ kit provides the primer needed to detect the mutation.

Q: Do I Need a Special Hybridization Procedure and Equipment?

No, a microwell thermal cycler and an ELISA plate reader are needed for detection by absorbance.

Q: What Kind of Labeling Materials Should I Choose for Mutector™?

Generally, Mutector™ uses biotin labeled dNTPs. Detection is then possible in a colorimetric format or a chemiluminescent format.

Q: Do I Need Special Training and Experience?

No, the Mutector™ procedure is 4 simple steps. Following the user manual instructions, an entry-level lab technician can successfully perform the assay.

Q: Do I Need to Prepare Special Reagents?

No, you do not need to prepare any buffers or reagents.

Q: What Materials are required but not supplied?

The customer must add the specific biotin-labeled dNTP to the STA Mix reagent vial. Distilled water is also required, (not supplied).

Q: What Equipment is needed for Mutector?

A microplate thermal cycler and a microplate reader are needed to run the Mutector assay.

Q: How Many Tests Are Included in Each Mutector Kit?

Mutector kits have 96 reactions.

Mutector™ vs. Current Technologies

Q: What Advantages Does Mutector™ Have Over Current Technologies?

Compared with existing mutation detection methods, Mutector™:

Requires No PCR sample treatment or purification

Has no false positives or false negatives

Sensitivity for 1% mutation

Fast and Efficient (96 samples in 3 hours)

Is a low cost alternative

Requires less labor

Does not require special equipment

Q: How Does Mutector™ Compare to Single Primer Extension Methods?

Mutector has multiple labeled nucleotides added to the extended primer, and multiple cycles of primer extensions. This creates a strong signal and a high sensitivity for the detection of mutations in mixed clinical samples containing low copy numbers of mutant DNA. There are no false positive results due to three sequence selective steps. Single primer extension methods rely on a single labeled nucleotide extension of the detection primer. This reduces sensitivity for the detection of low copy number SNP mutant strands in mixed clinical samples. Mutector™ can define the target base, and detect any type of mutation of the target base with one single test. Single primer extension has to perform separate tests for each type of mutation.