

Agilent QuikChange Lightning Multi Site-Directed Mutagenesis Kits

Data Sheet

Introduction

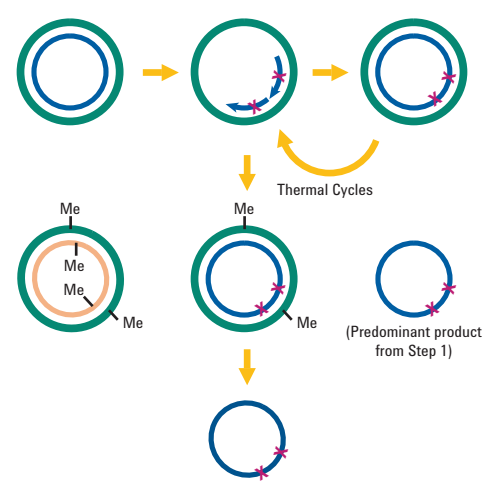
The Agilent QuikChange Lightning Multi Site-Directed Mutagenesis Kits lets you rapidly and efficiently create point mutations in plasmid DNA at up to five sites simultaneously. QuikChange Lightning Multi Kits are optimized for plasmids up to 8 Kb. The QuikChange Lightning technology employs a simple, 3-step protocol (Figure 1) that makes it easier and faster than other available methods or kits. Other methods are more cumbersome and prone to human error as they often require subcloning, single-stranded DNA rescue, or *in vitro* methylation.

Generate mutants in under four hours

>55% mutagenesis efficiency for up to 3 sites, equivalent to QuikChange Multi

Eliminate unintended mutations with ultra-high fidelity QuikChange Lightning Multi Enzyme

Free online access to the QuikChange Primer Design Program



- 1. Mutant Strand Synthesis**
Perform thermal cycling to:
 - Denature DNA template
 - Anneal mutagenic primers
 - Extend primers and ligate nicks with QuikChange Lightning Multi Enzyme**Total reaction time: 2 hours***
 - 2. Dpn I Digestion of Template**
 - Digest methylated and hemimethylated DNA with enhanced *Dpn I* enzyme**Total reaction time: 5 minutes**
 - 3. Transformation**
 - Transform mutated ssDNA into XL10-Gold Ultracompetent Cells**Total reaction time: 1.5 hours**
- * Based on a 5 Kb plasmid; excludes ramp times

Figure 1. QuikChange Lightning Multi Site-Directed Mutagenesis Kit method.

The QuikChange Method

QuikChange kits have provided researchers with a fast, easy, and efficient non-PCR method to reliably perform site-directed mutagenesis since 1996. Other commercially-available kits utilize PCR-based techniques, which can propagate errors with each successive round of thermal cycling. The QuikChange method uses a linear amplification strategy with only the parental strand serving as the DNA template. Combining this with our highest fidelity polymerases leads to a significant reduction in unwanted second-site errors. The existence of such errors is likely to complicate and delay downstream screening and analysis.

The Lightning Advantage

The ability to create mutations at multiple sites simultaneously provides users of QuikChange Lightning Multi Kits a significant savings in both time and effort compared to traditional methods. Conventional techniques to perform site-directed mutagenesis at five sites (along with accompanying miniprep and sequencing reactions) take 15 days to complete, but with QuikChange Lightning Multi the methods can be completed in only 3 days.

The QuikChange Lightning Multi Kits contain specially designed enzymes to shorten the time necessary to complete our signature 3-step protocol. Extension times for the thermal cycling process have been reduced by 75%, and digestion of the non-mutated parental template has been decreased to only five minutes. From the adjacent graph, when introducing multiple point mutations into three different template sizes, there is a significant reduction in thermal cycling and digestion times when comparing QuikChange Lightning Multi to QuikChange Multi (Figure 2). The QuikChange Lightning Multi Kits provide the same performance and ease-of-use as previous versions but with the added benefit of saving valuable research time.

Featured Application: Engineering Mutant Clone Collections

The QuikChange Lightning Multi Kits are well-suited for constructing a diverse collection of engineered mutant clones. Such a collection can be created and then screened for mutants with improved activity using the appropriate functional assay. For example, the system may be used to create mutant collections containing all possible amino acids at one site as well as combinations of different amino acids at multiple sites.

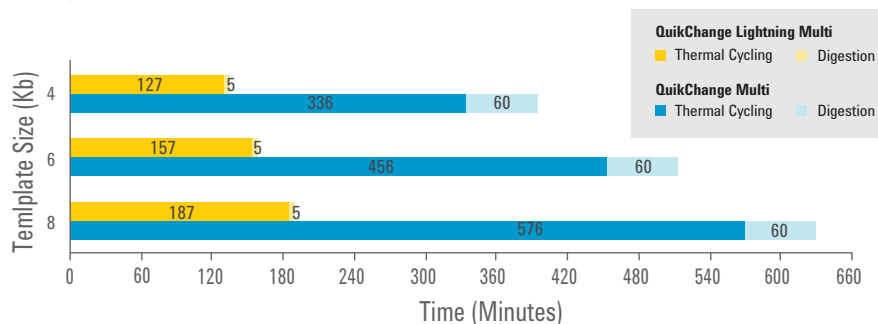


Figure 2. Reaction times (excluding ramp times) of QuikChange Lightning Multi and QuikChange Multi for different template sizes. Compared to QuikChange Multi, QuikChange Lightning Multi reduces both thermal cycling and digestion times for a variety of construct sizes.

Ordering information

Our QuikChange kits provide all of the necessary components, including enzymes and competent cells, to successfully and rapidly perform site-directed mutagenesis.*

Product Description	Reactions	Part Number
QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Academic	10	210515
	30	210513
QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Commercial	10	210516
	30	210514

*The Commercial QuikChange Lightning Multi Site-Directed Mutagenesis Kits include a limited use license which is required for purchases by commercial entities.

Related Products

Product Description	Reactions	Part Number
QuikChange Lightning Site Directed Mutagenesis Kit	10	210518
	30	210519

For more information

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