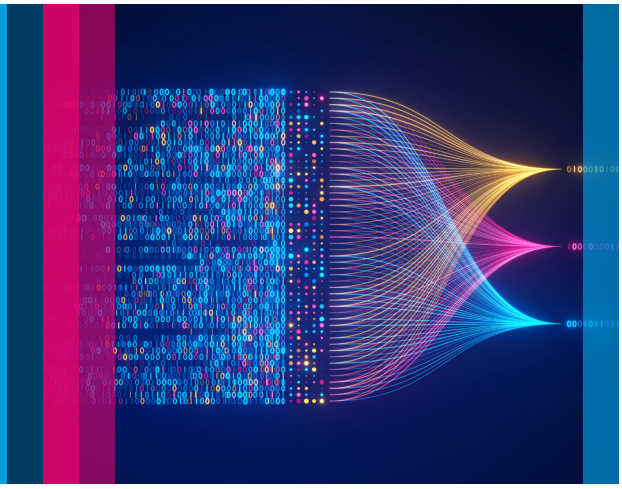
Scaled Mutagenesis Solutions

Agilent SurePrint Oligo Pools and Stratagene Bioreagents



Unlock the power of mutagenesis with Agilent

Mutagenesis is the process by which genetic information is changed. It is essential for understanding the influence of DNA sequence variation on biological structure and function, gene regulation, and protein engineering. Whether through random or directed alterations, from single point mutations to genome-scale phenotypic screens, Agilent provides a comprehensive range of mutagenesis solutions to advance your research.

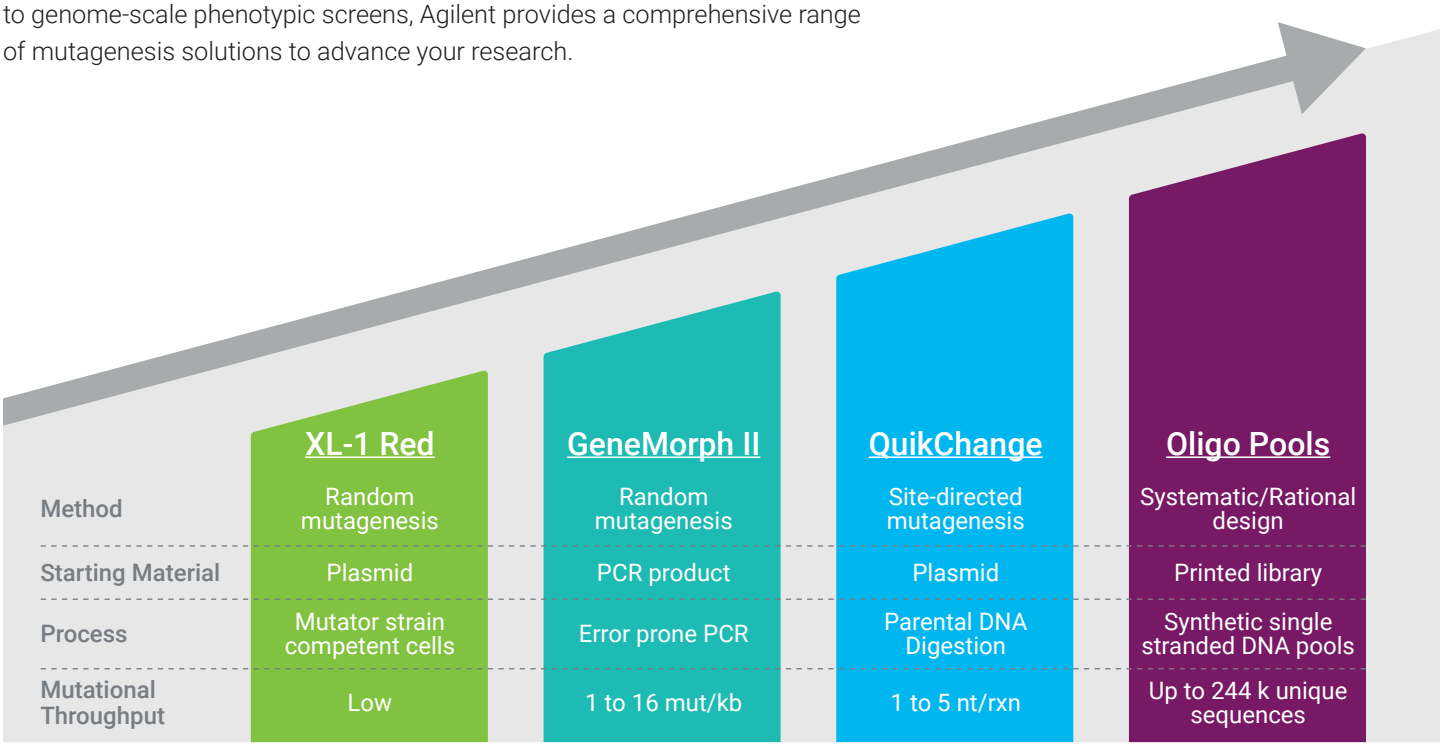


Figure 1. Different scales of mutagenesis demand different solutions. Satisfy low throughput needs with legacy Stratagene Bioreagents such as highly mutagenic XL-1 Red competent cells and GeneMorph II random mutagenesis kits for small scale experiments. Scale-up in a targeted fashion with QuickChange Site-Directed Mutagenesis kits or highly controlled and rationally designed chemically synthesized SurePrint Oligo Pools.

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Trusted Answers

SurePrint oligo pools

Agilent SurePrint pooled oligo synthesis is a high resolution, massively parallel DNA synthesis platform perfectly suited for applications in protein engineering, gene assembly, pooled CRISPR screening, and more.

- Select from standard or HiFi options for applications requiring higher fidelity, such as massively parallel reporter assays for promoter optimization.
- Experience industry-leading fidelity with error rates as low as one in 4000.
- Ensure exceptional uniformity for fewer false positives and false negatives.
- Benefit from turnaround times of just three to five days.
- Use our Agilent SureDesign software to upload your design.

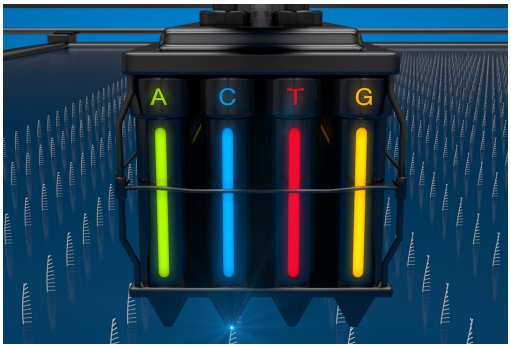
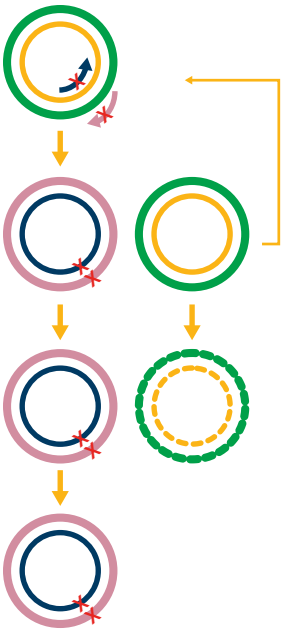


Figure 2. SurePrint Pooled Oligo Synthesis. The SurePrint Platform incorporates massively parallel synthesis of thousands of single stranded DNA oligos on a chemically treated glass substrate. The proprietary DNA printing process is engineered with exceptional spatial control for rapid, high resolution, and completely custom pooled oligo synthesis.



1. Mutant Strand Synthesis

   Perform thermal cycling to:
   - Denature DNA template
   - Anneal mutagenic primers containing desired mutation
   - Extend and incorporate primers with our exclusive QuikChange Lightning fusion enzyme

   Total reaction time: 1 hour*

2. Faster *Dpn* I Digestion of Template
   - Digest parental methylated and hemimethylated DNA with enhanced *Dpn* I enzyme

   Total reaction time: 5 minutes

3. Transformation
   - Transform mutated molecules into competent cells for nick repair

   Total reaction time: 1.5 hours

**Based on a 5 Kb plasmid; excludes ramp time.*

Figure 3. Overview of the QuikChange Lightning Site Directed Mutagenesis method.

QuikChange Lightning Site-Directed Mutagenesis kits

Agilent QuikChange Lightning kits provide a quick and efficient solution for single and multiple site-directed mutagenesis that lets you rapidly and efficiently create point mutations, amino acid substitutions, insertions, and deletions in virtually any double-stranded plasmid.

- Generate mutations in less than three hours with over 85% mutagenesis efficiency.
- Eliminate unintended mutations with the ultra-high fidelity QuikChange Lightning Enzyme.
- Access the Agilent QuikChange Primer Design Tool here.

Small scale, economical, and random mutagenesis

- Agilent XL-1 Red mutator strain competent cells exhibit efficient and reproducible random mutation at rates 5,000-fold higher than wild-type competent cells.
- Agilent GeneMorph II Random Mutagenesis kits use Mutazyme II DNA polymerase to introduce A, T, G, and C balanced and random mutations when performing error prone PCR.

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PR7001-3866

Published in the USA, March 27, 2025
5994-8258EN

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