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Confidently conquer cloning of long DNA fragments

High-efficiency cloning with TOPO XL-2 kit

The Invitrogen™ TOPO™ XL-2 Complete PCR Cloning Kit provides all the necessary elements for efficient cloning of extra-long PCR products (up to 13 kb). The kit uses the linearized and topoisomerase I–activated Invitrogen™ pCR™-XL-2-TOPO™ vector, which is compatible with the cloning of blunt-end PCR fragments (Figure 1). Amplification of long PCR fragments is enabled by Invitrogen™ Platinum™ SuperFi™ Green PCR Master Mix, which is included in the kit. Topoisomerase I activation of the vector enables PCR products to be ligated in just 5 minutes on your benchtop, resulting in high cloning efficiency (up to 90% positive recombinants).

The complete kit includes:

- **TOPO XL-2 PCR Cloning Kits** containing the pCR-XL-2-TOPO vector
- **Platinum SuperFi Green PCR Master Mix**—featuring a proofreading DNA polymerase (>300x fidelity compared to *Taq* polymerase) with high processivity and a density gradient to generate accurate, long PCR amplicons ready to load onto an agarose gel for gel extraction

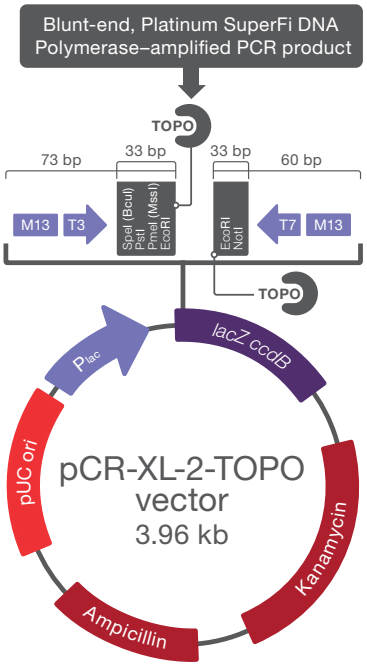

Figure 1. The pCR-XL-2-TOPO vector.

- **Invitrogen™ PureLink™ Quick Gel Extraction and PCR Purification Combo Kit**—designed to purify DNA fragments in less than 30 minutes from agarose gels or direct PCR purification using a silica-based spin cartridge
- **Invitrogen™ One Shot™ OmniMAX™ 2 T1R Chemically Competent *E. coli* Cells**—an improved, high-efficiency chemically competent cell line, perfect for use in all cloning applications

High cloning efficiency

The pCR-XL-2-TOPO vector enables high cloning efficiency (Figure 2) and includes:

- *ccdB* gene for positive selection
- EcoRI site flanking the PCR product insertion site for easy excision of inserts
- Ampicillin- and kanamycin-resistance genes for your choice of antibiotic selection
- T7 promoter/priming site for *in vitro* transcription
- T7, T3, and M13 forward- and reverse-primer sites for sequencing

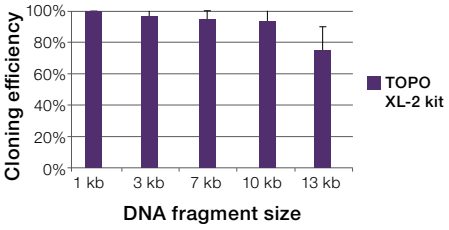

Figure 2. TOPO XL-2 PCR cloning kits show high cloning efficiencies. The TOPO XL-2 kit offers very high cloning efficiency for a broad range of different sized targets. Thermo Scientific™ Lambda genomic DNA targets ranging from 1 to 13 kb were cloned using the TOPO XL-2 cloning kit workflow.

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Exceptional accuracy of your clone

Platinum SuperFi Green PCR Master Mix contains a proofreading DNA polymerase, which combines exceptional fidelity with the trusted Invitrogen™ Platinum™ hot-start technology, designed for the highest success in PCR (Figure 3). Featuring >300x *Taq* fidelity, Platinum SuperFi Green PCR Master Mix is ideally suited for cloning, mutagenesis, and other applications benefiting from superior sequence accuracy, such as working with long DNA fragments (Figure 4).

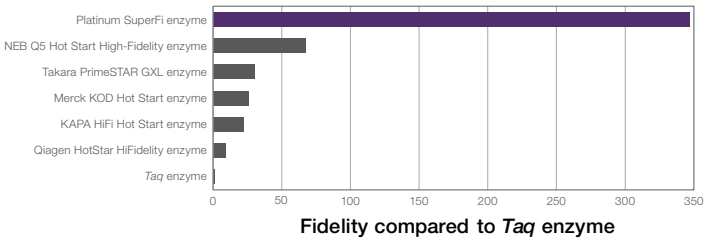

Figure 3. Platinum SuperFi DNA Polymerase exhibits superior fidelity. Polymerase fidelity was measured by next-generation sequencing using unique molecular identifiers (UMIs), and reads from the same UMI family were aligned to call errors. The polymerase fidelities were normalized to *Taq* polymerase.

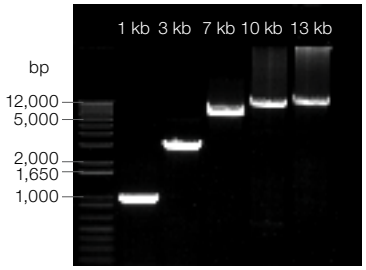

Figure 4. Platinum SuperFi DNA Polymerase has high specificity with amplifying larger targets. 1, 3, 7, 10, and 13 kb targets from Lambda genomic DNA were amplified following manufacturer's standards for PCR cycling parameters.

High transformation efficiency

The OmniMAX 2 T1^R cells offer one of the highest transformation efficiencies (>5 x 10^9 transformants/µg pUC19) among chemically competent *E. coli* cells in the One Shot format. These highly versatile cells also provide efficient transformation of highly methylated DNA, since OmniMAX 2 T1^R cells lack the *E. coli* K12 restriction systems (*mcr*A Δ(*mrr hsd*RMS-*mcr*BC)). In addition, the strain carries the *tonA* genotype, which confers resistance to T1 and T5 phage infection. This helps protect your samples and minimize the possibility of downtime in your lab due to phage contamination (Figure 5).

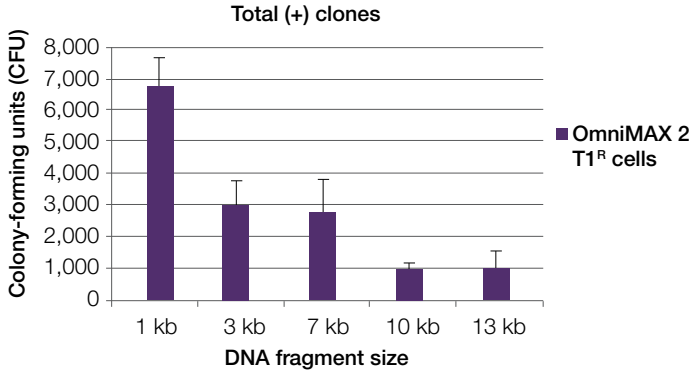

Figure 5. The chemically competent OmniMAX 2 T1^R cells yield high numbers of CFU. Clones were selected on plates containing kanamycin and 1 mM IPTG. A total of 10–12 transformants were analyzed by colony PCR.

Request the TOPO XL-2 Complete PCR Cloning Kit for your Supply Center at **thermofisher.com/scproductrequests**

Ordering information

Product	Size	Cat. No.
TOPO XL-2 Complete PCR Cloning Kit, with One Shot OmniMAX 2 T1^R Chemically Competent *E. coli* Cells	20 reactions	K8050-20
	10 reactions	K8050-10

Find out more at **thermofisher.com/topoxl2**

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