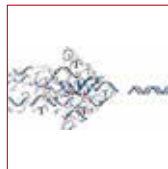


**NUCLEIC ACID  
SAMPLE PREPARATION**



**illustra™**

Purify. Amplify. Simplify



**ExoProStar 1-Step**

Fast 30-minute, hands-free protocol



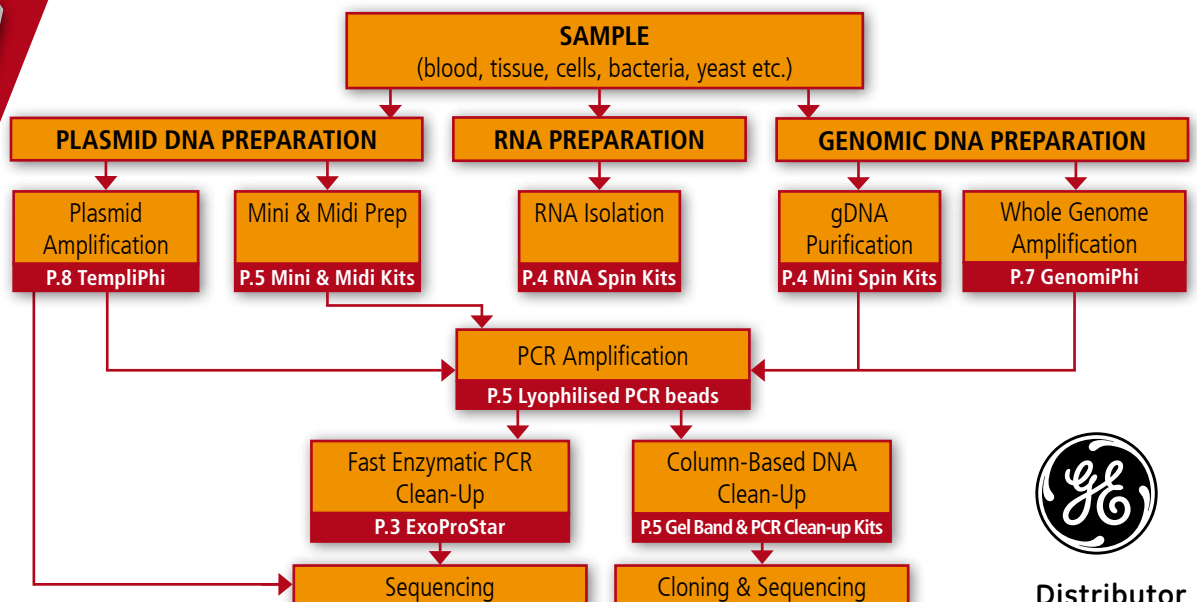
**Nucleic Acid Purification**

DNA, RNA, Plasmid, Gel Band and PCR



**GenomiPhi; TempliPhi**

Whole genome and plasmid amplification



Distributor

# ExoProStar 1-Step

illustra ExoProStar 1-Step is optimized to purify PCR and sequencing set up reactions quickly, efficiently and reliably.

illustra ExoProStar 1-Step contains a mix of illustra Alkaline Phosphatase and Exonuclease A, formulated to work together to remove unincorporated primers and nucleotides from amplification reactions in preparation for sequencing, cloning, genotyping, or further DNA modification reactions.

- Enzymes optimized to work together for high efficiency removal of unincorporated primers and nucleotides
- Enzymes provided in a single tube, just one simple pipetting step is required to prepare the reaction
- Fast 30 min protocol
- Scalable for different reaction sizes
- No loss of PCR product
- Easy to automate
- Complete heat inactivation of both enzymes within 15 min

illustra ExoProStar 1-Step builds on our long history and expertise in providing DNA cleanup products and expands on our original patents for enzymatic sample cleanup using Exonuclease A and Alkaline Phosphatase. With illustra ExoProStar 1-Step we have improved on existing products to give you enhanced PCR and sequence reaction cleanup.

The PCR product is now ready for use in downstream reactions and processes. If a larger volume of PCR product is required, simply increase the volume of illustra ExoProStar 1-Step added in proportion with the volume of PCR product.

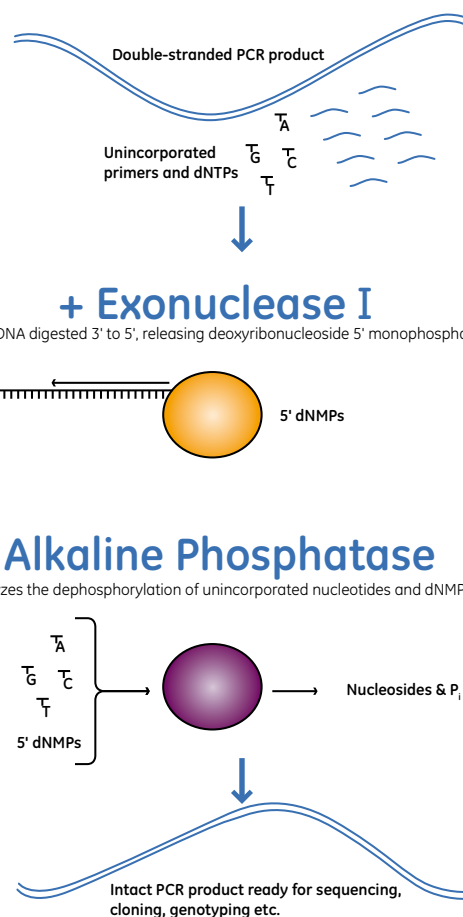


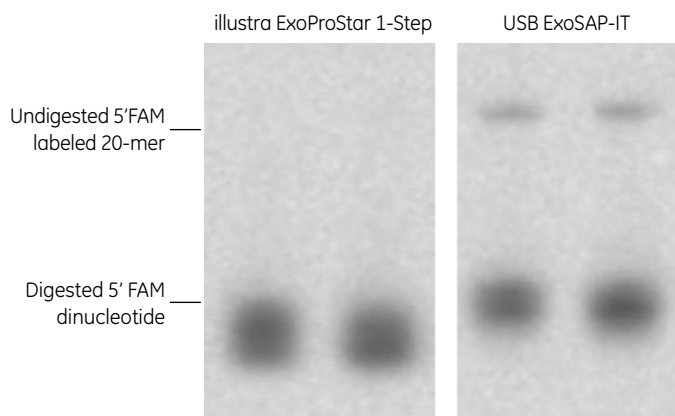
Fig 1. Schematic representation of the PCR cleanup process using illustra ExoProStar 1-Step.

## Optimised for efficient primer digestion

The new illustra Alkaline Phosphatase and Exonuclease A enzymes have been optimised for highly efficient primer digestion, helping to improve the quality of downstream analysis. In analysis of primer digestion, illustra ExoProStar 1-Step was more efficient in digesting primers than the traditional USB® ExoSAP-IT® product when used under the manufacturer's standard operating protocol.

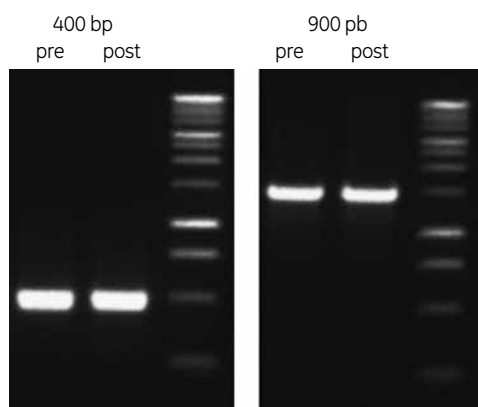
Fig 2\*. Electrophoretic analysis of the digestion of a 5'FAM labeled 20mer primer. Reactions were conducted according to manufacturer's instructions for illustra ExoProStar 1-Step and USB ExoSAP-IT respectively, using 10 pmol of primer per reaction. No detectable primer remained in the samples digested using illustra ExoProStar 1-Step but undigested primer remained in samples treated with USB ExoSAP-IT.

\* Data presented in Fig 2 was obtained by scientists at GE Healthcare, using experimental conditions as set out in the manufacturer's operating instructions for USB ExoSAP-IT.



## No loss of PCR product

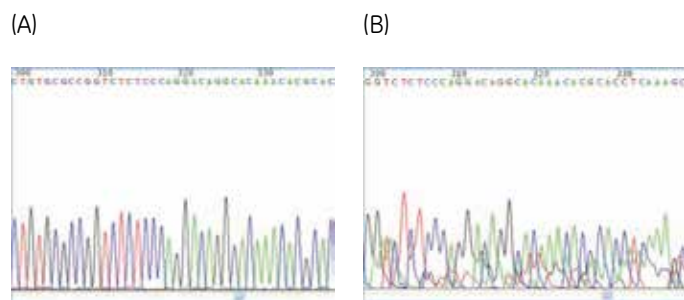
The use of an enzymatic digestion approach to clean up amplification reactions reduces losses of PCR product. The process has no intermediate transfer steps, spin columns or binding matrix to retain your PCR product, and doublestranded DNA is left intact by the Exonuclease A and Alkaline Phosphatase enzymes. The size of the PCR fragment does not affect the cleanup efficiency of the reaction.



**Fig 3.** Agarose gel electrophoresis of different size PCR products pre- and post-digestion with illustra ExoProStar 1-Step. Samples were digested for 15 min at 37° followed by denaturation of the illustra ExoProStar 1-Step enzymes at 80°C for 15 min as per the recommended operating protocol. No loss of PCR product was detected in any of the samples.

## High-quality sequencing results

Removal of unincorporated primers and nucleotides is essential to high quality DNA sequencing. Failure to fully remove these components leads to high background signals and miscalling of bases. With illustra ExoProStar 1-Step, Phred20 quality scores were routinely achieved at read lengths >800 bp, equivalent to or better than other approaches to sample preparation.

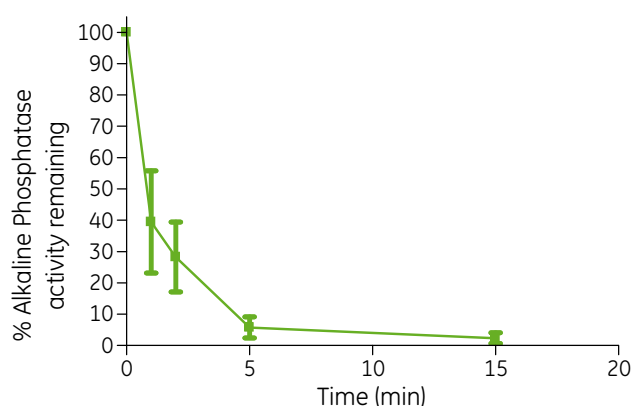


**Fig 4.** The importance of sample clean up before DNA sequencing is illustrated in the comparison between panel A, showing PCR sequence quality following treatment with illustra ExoProStar 1-Step and panel B showing sequence quality without this treatment. Read length, base calling and sequence quality are significantly improved by the use of illustra ExoProStar 1-Step.

## Heat inactivation of illustra ExoProStar 1-Step enzymes

Downstream operations can be adversely affected by the presence of active Exonuclease A or Alkaline Phosphatase in the PCR product following digestion. It is therefore essential that these enzymes are effectively denatured during the postdigestion heating step.

Some alkaline phosphatase enzymes are tolerant of high temperature treatment and may retain some activity causing problems in later processes. The illustra Alkaline Phosphatase has been optimized to be quickly denatured, reducing the risk of downstream interference.



**Fig 5.** Temperature denaturation profile of illustra Alkaline Phosphatase at 75°C showing rapid and complete denaturation within 15 min. The illustra ExoProStar protocol recommends denaturation of the enzyme components at 80°C, providing even greater confidence in the inactivation of both enzymes prior to further downstream processes.

## Kit components and storage

The illustra ExoProStar 1-Step kit contains one tube of ready mixed illustra Exonuclease A and Alkaline Phosphatase enzymes. The kit is supplied on dry ice and should be stored at -20°C. The product can be sub-aliquoted if required for storage convenience and should be maintained on ice during reaction set up.

### ExoProStar - 1 Step: Enzymatic PCR and Sequence reaction clean up kit

- 1-Step protocol (enzymes are provided in one tube), only one pipetting step is needed
- Protocol duration: 30 mins

Pack size	Cat. No.
100 reactions	US77702
500 reactions	US77705
2000 reactions	US77720
5000 reactions	US77750

# Nucleic Acid Purification

DNA, RNA, Plasmid, Gel Band and PCR



## illustra™ Genomic DNA purification

Kits available for rapid DNA extraction from:

- Variety of animal Tissues
- Mammalian Cell cultures
- Blood (whole, buffy coat, bone marrow, nucleated red blood cells)
- Bacteria (gram-positive and gram-negative)

gDNA extracted with these kits can be used in most downstream applications.

Description	Cat. No.
illustra tissue and cells genomicPrep Mini Spin Kit (50)	28-9042-75
illustra tissue and cells genomicPrep Mini Spin Kit (250)	28-9042-76
illustra blood genomicPrep Mini Spin Kit (50)	28-9042-64
illustra blood genomicPrep Mini Spin Kit (250)	28-9042-65
illustra bacteria genomicPrep Mini Spin Kit (50)	28-9042-58
illustra bacteria genomicPrep Mini Spin Kit (250)	28-9042-59



## illustra™ RNAspin purification

- High quality total RNA from diverse sample types – including bacteria
- Suitable for use in sensitive downstream applications
- Results with small amounts of starting material ( $\geq 10$  HeLa cells for RT-PCR)
- Simple and convenient format suitable for all levels of expertise
- DNase I is included

Description	Cat. No.
RNAspin Mini (20)	25-0500-70
RNAspin Mini (50)	25-0500-71
RNAspin Mini (250)	25-0500-72
RNAspin 96 Kit (4x96)	25-0500-75

96-WELL FORMAT AVAILABLE





## illustra™ plasmidPrep DNA purification

For rapid isolation of high and low copy number plasmid DNA. Total preparation time of 10 mins (half the time of competing kits). High quality plasmid DNA with excellent reproducibility. RNase is pre-added.

Description	Cat. No.
illustra plasmidPrep Mini Spin (50)	28-9042-69
illustra plasmidPrep Mini Spin (250)	28-9042-70
illustra plasmidPrep Midi Flow (25)	28-9042-67
Illustra plasmidPrep Midi Flow (100)	28-9042-68



## illustra™ Gel band and PCR cleanup:

Isolate and concentrate DNA fragments (50bp to 10kb) from:

- PCR mixtures
- DNA-containing agarose gel bands
- Enzyme-based DNA modifications, and
- Restriction digestions

Description	Cat. No.
illustra GFX PCR DNA & Gel Band Purification Kit (100)	28-9034-70
illustra GFX PCR DNA & Gel Band Purification Kit (250)	28-9034-71
illustra GFX 96 PCR Purification Kit (10x96)	28-9034-45



## illustra™ Ready-To-Go PCR beads:

- Pre-mixed, pre-dispensed, single-dose reactions
- Optimized for performing PCR amplifications
- Stable at Room Temperature
- Great reproducibility
- Just add water, primer and template
- Minimise pipetting errors and contamination

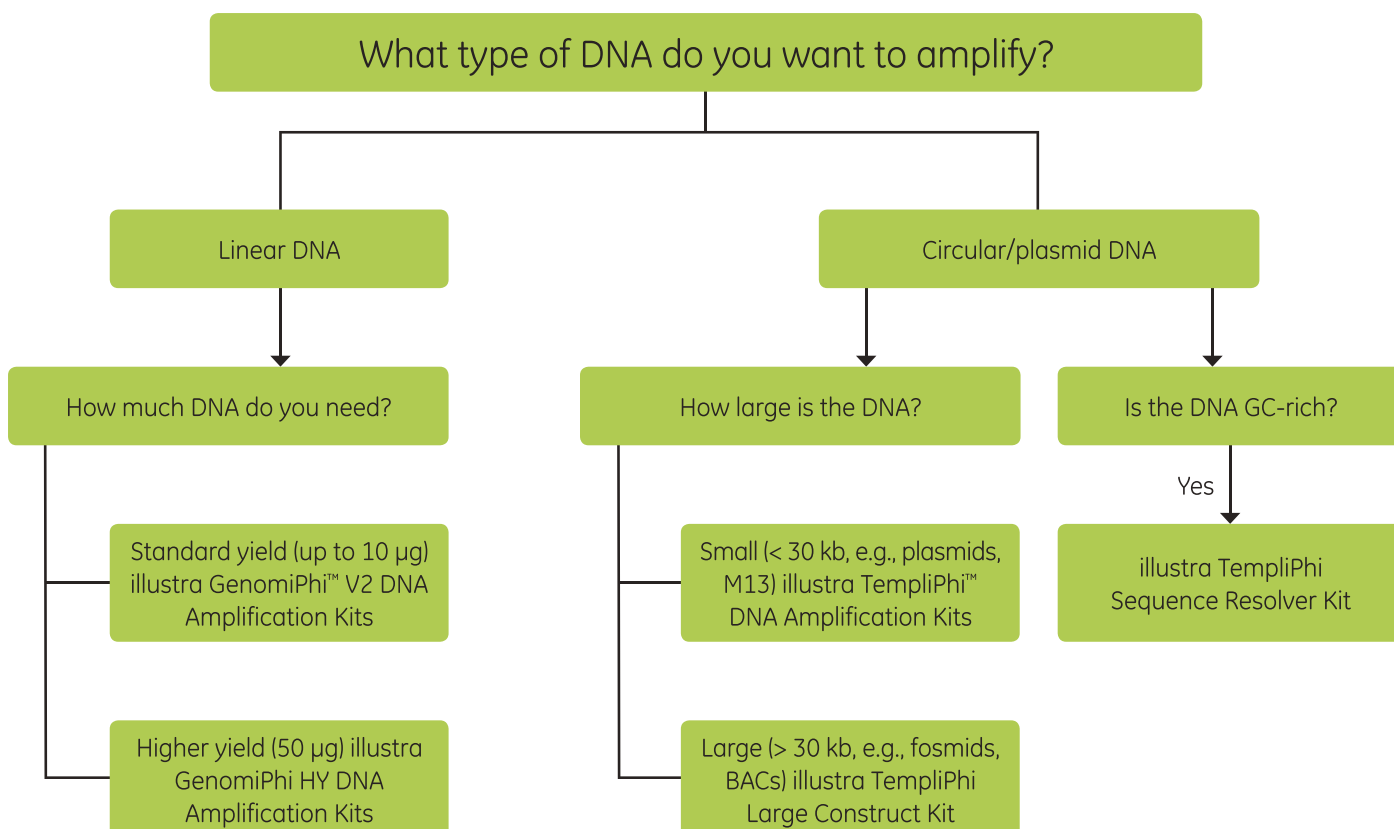
Description	Cat. No.
PuReTaq Ready-To-Go PCR Beads (0.2ml tubes/plate) 96rxn	27-9557-01
PuReTaq Ready-To-Go PCR Beads (0.2ml tubes/plate) 5x96rxn	27-9557-02
PuReTaq Ready-To-Go PCR Beads (0.5ml tubes) 100rxn	27-9558-01
PuReTaq Ready-To-Go PCR Beads (0.2ml hinged tube w cap) 96rxn	27-9559-01
Hot Start Mix Ready-To-Go PCR Beads (0.2ml tubes/plate) 96rxn	28-9006-53
Hot Start Mix Ready-To-Go PCR Beads (0.2ml tubes/plate) 5x96rxn	28-9006-54
Hot Start Mix Ready-To-Go PCR Beads (0.5ml tubes) 100rxn	28-9006-46

# illustra™ GenomiPhi and TempliPhi

Fast and simple Phi29 based illustra  
DNA Amplification Kits



- The highly processive Phi29 DNA polymerase elicits strong strand displacement enabling rapid DNA replication from multiple sites.
- Phi29 also has 3'-5' exonuclease proof-reading activity, resulting in 100-fold higher fidelity compared to Taq DNA polymerase.
- From nanogram amounts of starting material, Phi29 DNA polymerase rapidly produces consistent microgram yields of high quality DNA that is ready for direct use in a range of downstream analyses, including sequencing and genotyping.
- The one-tube, one temperature format simplifies the DNA preparation process, facilitating automation for high-throughput sample amplification.

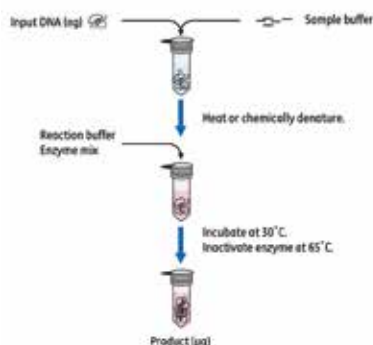




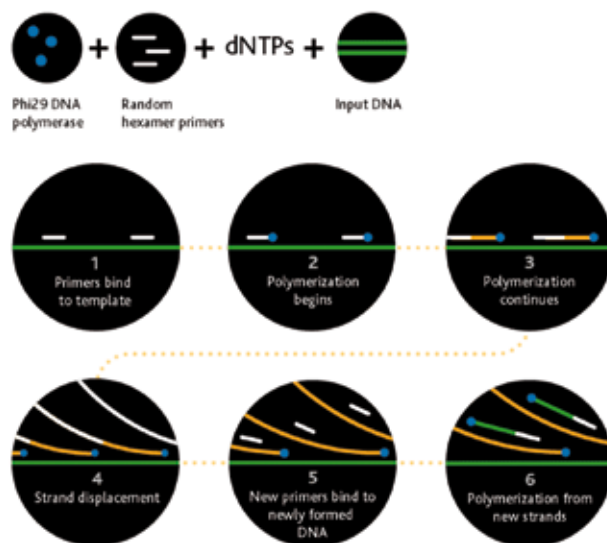
# Illustra™ GenomiPhi

For whole genome, non-specific amplification  
– ideal for low starting quantities of DNA

- Whole genome amplification by isothermal strand displacement
- Use various input sample resources: purified DNA (as little as 10 ng), FTA card lysate, blood lysate, mouth wash lysate or buccal swab



## 4.1 The basic principle



### GenomiPhi V2 DNA Amplification Kit

- Quick mini-scale genomic DNA preparation 4–7 µg
- One simple protocol for all different types of source material
- No background amplification in negative controls

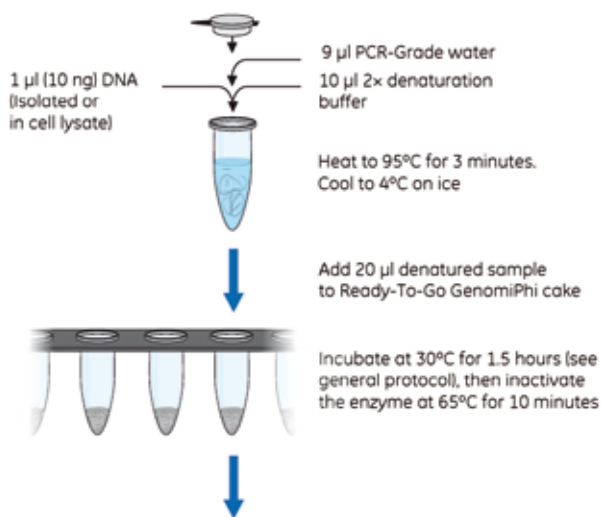


### GenomiPhi HY DNA Amplification Kit

- Midi-scale genomic DNA preparation 40–50 µg
- Less hands-on time compared to traditional isolation methods
- Simple, automation-friendly protocol with great reproducibility

Description	Cat. No.
illustra GenomiPhi V2 Kit - 25 Rxns	25-6600-30
illustra GenomiPhi V2 Kit- 100 Rxns	25-6600-31
illustra GenomiPhi V2 Kit - 500 Rxns	25-6600-32

Description	Cat. No.
illustra GenomiPhi HY Kit - 25 Rxns	25-6600-22
illustra GenomiPhi HY Kit - 100 Rxns	25-6600-20
illustra GenomiPhi HY Kit - 1000 Rxns	25-6600-25



### Ready-To-Go GenomiPhi V3 DNA Amplification Kits

- Up to 20 µg yield from nanogram amounts of DNA sample
- no thermal cycler required
- combines the unique characteristics of Phi29 DNA polymerase amplification and preformulated reaction set-up with RTG bead technology

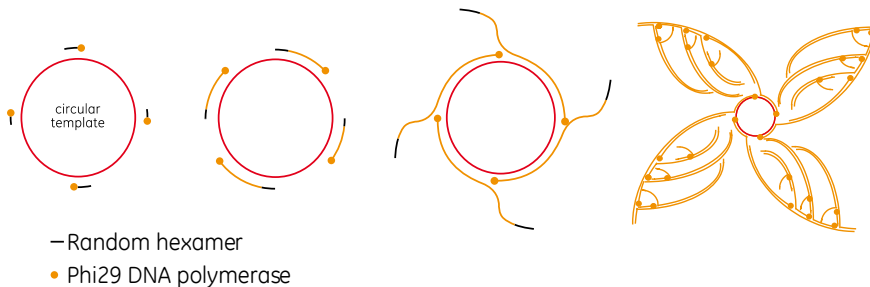
Description	Cat. No.
illustra Ready-To-Go GenomiPhi V3 – 24 rxns	25-6601-24
illustra Ready-To-Go GenomiPhi V3 – 96 rxns	25-6601-96
illustra Ready-To-Go GenomiPhi V3 – 480 rxns	25-6601-97

12–20 µg amplified DNA (no DNA synthesis in no template controls)

# illustra™ TempliPhi

Prepare DNA directly from plasmid or fosmid glycerol stocks or colonies – Eliminates overnight culture steps

- Amplified DNA can be used directly for sequencing and library construction without further purification
- Reduces hands-on time, without compromising on sequencing success and read lengths.
- Use various input sample types: small amount of bacterial cells containing a plasmid (picked from agar plates and added directly to the TempliPhi amplification reaction), an isolated plasmid, an M13 phage, or any circular DNA sample, microliter quantities of a saturated culture.

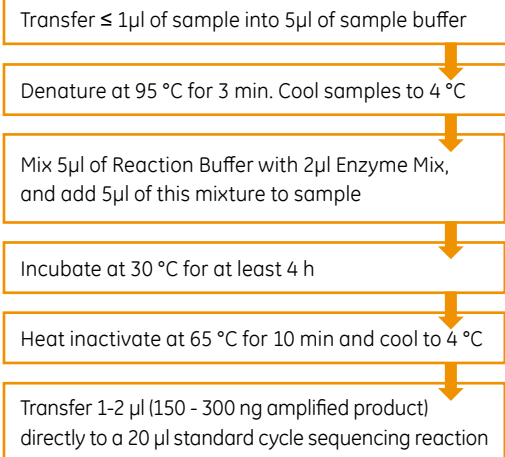


Random hexamer primers anneal to the circular template DNA at multiple sites. Phi29 DNA polymerase extends each of these primers.

When the DNA polymerase reaches a downstream extended primer, strand displacement synthesis occurs. The displaced strand is rendered single-stranded and available to be primed by more hexamer primer.

The process continues, resulting in exponential, isothermal amplification.

## TempliPhi 100/500 Reaction Kit method



Description	Cat. No.
illustra TempliPhi Amplification Kit - 100 Rxns	25-6400-10
illustra TempliPhi Amplification Kit - 500 Rxns	25-6400-50
illustra TempliPhi Amplification Kit - 2000 Rxns	28-9642-86

Description	Cat. No.
illustra TempliPhi Sequence Resolver Kit - 20 reactions	28-9035-29
illustra TempliPhi Sequence Resolver Kit - 50 reactions	28-9035-30
illustra TempliPhi Sequence Resolver Kit - 200 reactions	28-9035-31

Description	Cat. No.
illustra TempliPhi Large Construct Kit - 1000 reactions	25-6400-80



Distributor

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