Ver 1.0

HB1380

Handbook for

☐ FFPE Tissue DNA

exgene tm

DNA PURIFICATION HANDBOOK

GeneAll

Customer & Technical Support

Do not hesitate to ask us any question.

We thank you for any comment or advice.

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This protocol handbook is included in :

GeneAll® Exgene™ FFPE Tissue DNA (138-150, 135-152)

Visit www.geneall.com or www.geneall.co.kr for FAQ, QnA and more information.

INDEX

Kit Contents

Exgene™ FFPE Tissue DNA

Components	Quantity		Storage
	138-150	138-152	
Buffer DP	55 ml	140 ml x 2	
Buffer FPL	15 ml	60 ml	
Buffer FPB	15 ml	60 ml	
Buffer BW (concentrate) *	16 ml	90 ml	
Buffer TW (concentrate) *	10 ml	40 ml	
Buffer AE **	15 ml	60 ml	Room temperature
RNase A solution (100 mg/ml) ***	300 ul	1.2 ml	(15 ~ 25°C)
Proteinase K (mg) ****	24 mg	120 mg	
PK Storage buffer	1.5 ml	7 ml	
GeneAll® Column type G (with collection tube)	50	250	
Collection tube	150	750	
Protocol Handbook	1	1	

** Before using for the first time, add absolute ethanol (ACS grade or better) into buffer BW and TW as indicated on the bottle*

** Contains sodium azide as a preservative*

*** 10 mM Tris-HCl, pH 9.0, 0.5 mM EDTA*

**** For the long-term storage of RNase A, store below 4°C*

***** After reconstitution of Proteinase K with PK Storage buffer, store at 4°C for its stability But for long-term storage, store at -20°C*

Product Specifications

Exgene™ FFPE Tissue DNA	
Type	Spin
Maximum amount of starting samples	Up to 8 sections of 10 um in thickness
Maximum loading volume	~ 750 ul
Minimum elution volume	~ 30 ul
Maximum binding capacity	~ 60 ug

Quality Control

All components in GeneAll® Exgene™ FFPE Tissue DNA kit are manufactured in strictly clean condition, and its degree of cleanness is monitored periodically. For consistency of product, the quality certification process is carried out thoroughly and only the qualified is delivered.

Storage Conditions

All components of GeneAll® Exgene™ FFPE Tissue DNA kit should be stored at room temperature (15 ~ 25°C). RNase A solution is delivered under ambient conditions and can be stored at room temperature for 6 months without significant decrease in activity. But for the long-term storage, storage at -20 ~ 8°C is recommended. After reconstitution of Proteinase K with storage buffer, it should be stored below 4°C for conservation of activity. It can be stored at 4°C for 1 year without significant decrease in activity. But for the long-term storage, storage at below -20°C is recommended.

During shipment or storage below cold ambient condition, a precipitate can be formed in buffer FPL or FPB. In such a case, heat the bottle at 56°C to dissolve thoroughly. Using precipitated buffers will lead to poor DNA recovery.

GeneAll® Exgene™ FFPE Tissue DNA kit is guaranteed for 18 months from the production date.

User Precautions

Before use, read these instructions carefully.

The buffers included in GeneAll® Exgene™ FFPE Tissue DNA kit contain irritant which is harmful when in contact with skin or eyes, or when inhaled or swallowed. Care should be taken during handling. Always wear gloves and eye protector, and follow standard safety precautions. In case of contact, wash immediately with plenty of water and seek medical advice.

In detail, Buffer DP contains irritant which is harmful when in contact with skin or eyes, or when inhaled or swallowed. Care should be taken during handling.

Buffer FPB and BW contain chaotropes. It can form highly reactive compounds when combined with bleach. Do NOT add bleach or acidic solutions directly to the sample-preparation waste. Please consult the Material Safety Data Sheet (MSDS) for information regarding hazards and safe handling practices.

Preparation of Proteinase K solution (20 mg/ml) at first use

Proteinase K is provided in a freeze-dried format. Thus, it should be reconstituted thoroughly with PK Storage buffer before experiment. PK storage buffer contains calcium chloride and glycerol which do not affect the enzyme activity, but contribute to its stability.

To obtain a solution of 20 mg/ml of Proteinase K, add 1.2 ml (Cat. No.138-150) or 6 ml (Cat. No.138-152) of the PK Storage buffer to the glass vial containing lyophilized Proteinase K, and mix carefully and gently to avoid foaming.

Reconstituted enzyme should be stored at 4°C for its stability. But for long-term storage, storage at -20°C is recommended.

Materials Not Provided

Reagent

- Absolute ethanol, ACS grade or better

Disposable material

- Pipette tips
- 1.5 ml or 2.0 ml microcentrifuge tubes

Equipment

- Microtome
- Microcentrifuge
- Heating block or water bath
- Suitable protector (ex; lab coat, disposable gloves, goggles, etc)

Product Description

GeneAll® Exgene™ FFPE Tissue DNA kit provides a convenient and easy method for the isolation of total DNA from Formalin Fixed and Paraffin Embedded (FFPE) specimen by non-organic solvent. FFPE is one of the most commonly used methods of clinical tissue preservation; the clinical tissue is fixed by formalin and subsequently embedded in paraffin to keep its original form.

The FFPE tissue is useful in disease research such as microscopic observation and immunohistochemical analysis. And the extracted-nucleic acid from FFPE specimen can be used for molecular diagnosis of various diseases. However, during the fixative process, the nucleic acids in FFPE are damaged significantly by various degrees of crosslinking between DNA and protein, and the damage get worse during its long-term preservation. For such a reason, the DNA isolated from the preserved FFPE specimen generally has low qualities in its yield, purity, integrity and PCR-processivity. But despite these problems, the purified nucleic acids from FFPE specimen are widely used for the PCR targeted to relatively short DNA fragments.

To obtain DNA from FFPE tissue by GeneAll® Exgene™ FFPE Tissue DNA kit, FFPE specimen is deparaffinized in buffer DP which rapidly separate tissue from paraffin sections, and then the sample is lysed in the optimized buffer containing detergents and lytic enzymes. Under high salt condition, DNA in the lysate binds to silica membrane and impurities pass through membrane in to a collection tube. The membrane is washed with a series of alcohol-containing buffer to remove any traces of proteins, cellular debris and salts. Finally pure DNA is released into a clean collection tube with deionized water or low ionic strength buffer.

This fast and convenient procedure of GeneAll® Exgene™ FFPE Tissue DNA kit takes only 150 min for complete preparations of total DNA. Purified DNA can be used directly for PCR (≤500 bp), real-time PCR, and other downstream applications.

GeneAll®
Protocol for FFPE Tissue

Before experiment

- *Prepare the heat block or water bath to 56 °C and 90 °C*
- *Prepare absolute ethanol*
- *Prepare 1.5 ml and 2.0 ml microcentrifuge tube*
- *All centrifugation should be performed at room temperature*
- *Buffer FPL and FPB may precipitate at cool ambient temperature*
  If so, dissolve it in 56 °C water bath

1. **Cut up to 8 sections of 5 - 10 um in thickness from the FFPE sample block.**

   The amount of starting sample should not exceed 8 sections of 10 um in thickness.
   It is recommended to use 1 ~ 3 sections of 5 ~ 10 um in thickness.

2. **Place the sections in 2.0 ml microcentrifuge tube.**

   Trim the marginal paraffin off from the tissue sections as much as possible.

3. **Add 1000 ul of buffer DP and vortex to mix.**

4. **Incubate at 56°C for 3 min and spin down briefly to remove any drops from inside of the lid.**

   Make sure that paraffin thoroughly melts during the incubation step.

5. **Carefully discard the buffer DP as much as possible by pipetting without any loss of tissue pieces.**

   Too much paraffin in the starting sample may cause re-solidification of melted paraffin.
   If so, repeat step 3 ~ 5 once more to remove the residual paraffin from the sample.

6. **Add 180 ul of buffer FPL and mix thoroughly by vigorous vortexing.**

7. **Add 20 ul of Proteinase K solution (20 mg/ml, provided) and mix thoroughly by vortexing or pipetting. Incubate at 56˚C for 1 hr.**

   It is essential to mix the components thoroughly for proper lysis.
   Lysis time varies from 1 hr to overnight depending on the type of tissue and the starting amount. The lysate should become translucent without any particles after complete lysis.
   To enhance the lysis efficiency during this incubation step, vortex the tube every 15 min or use shaking incubator or agitator.

8. **Incubate at 90˚C for 1 hr and spin down briefly to remove any drops from inside of the lid.**

   This step allows DNA to be decrosslinked from DNA-Protein crosslinking.
   Cool down to room temperature before proceeding to next step.

9. ***(Optional :)*** **If RNA-free DNA is required, add 4 ul of RNase A solution (100 mg/ml, provided), vortex to mix thoroughly, and incubate for 2 min at room temperature.**

10. **Add 200 ul of buffer FPB to the tube and mix thoroughly by vortexing. Spin down briefly to remove any drops from inside of the lid.**

    Disregard a little residual buffer DP in upper phase, because it will not affect the next procedure. If the lysate volume is larger than 200 ul, the volume of buffer FPB should be adjusted proportionally.

11. **Add 200 ul of absolute ethanol (not provided) to the sample, pulse-vortex to mix the sample thoroughly, and spin down briefly to remove any drops from inside of the lid.**

    If the lysate volume is larger than 200 ul, the volume of ethanol should be adjusted proportionally.

12. **Transfer all of the mixture to the SV column carefully, centrifuge for 1 min at 6,000 x g above (>8,000 rpm) and replace the collection tube with new one (provided).**

    If the mixture has not passed completely through the membrane, centrifuge again at full speed (>13,000 x g) until all of the solution has passed through. Centrifugation at full speed will not adversely affect DNA recovery.

13. Add 600 ul of buffer BW, centrifuge for 1 min at 6,000 x g above (>8,000 rpm) and replace the collection tube with new one (provided).

If the SV column has a colored residue after centrifugation, repeat this step until no colored residue remains. See Trouble shooting guide for detail.
Centrifugation at full speed will not adversely affect DNA recovery.

14. Add 700 ul of buffer TW. Centrifuge for 1 min at 6,000 x g above (>8,000 rpm). Discard the pass-through and reinsert the SV column back into the collection tube.

Centrifugation at full speed will not adversely affect DNA recovery.

15. Centrifuge at full speed (>13,000 x g) for 1 min to remove residual wash buffer. Place the SV column into a fresh 1.5 ml microcentrifuge tube (not provided).

Care must be taken at this step for eliminating the carryover of buffer TW. If a carryover of buffer TW still occurs, centrifuge again for 1 min at full speed with the collection tube before transferring to a new 1.5 ml microcentrifuge tube.
Centrifugation must be performed at full speed (13,000 x g ~ 20,000 x g).

16. Add 50 ul of buffer AE or distilled deionized water. Incubate for 1 min at room temperature. Centrifuge at full speed (>13,000 x g) for 1 min.

Elution volume can be adjusted according to an experiment's purpose.
For long-term storage of purified DNA, eluting in buffer AE is recommended. But EDTA included in buffer AE can inhibit subsequent enzymatic reactions, so you can avoid such latent problem by using distilled deionized water (>pH7.0) or Tris-HCl (>pH8.5).
When using water for elution, check the pH of water before elution.

Troubleshooting Guide

Facts	Possible Causes	Suggestions
Low or no recovery	**Insufficient lysis**	Incomplete lysis is due to too much starting material, imperfect mixing with buffer FPL, insufficient time for complete lysis or not enough disruption of sample.
	Weakened activity of Proteinase K caused by inappropriate storage condition or out-of date	Proteinase K must be stored below 4°C for maintenance of proper activity. Lysis cannot be done properly with degenerated Proteinase K. Replace with new one.
	Starting sample is too old or inappropriately fixed	Too old or inappropriately fixed sample often cause low recovery. If possible, use the FFPE sample fixed within 1 hour of surgical resection and use fresh FFPE sample.
	Loss of starting sample during deparaffinization	Intensive care must be taken when removing the buffer DP with paraffin in order not to lose the starting sample.
SV column has colored residue associated with it after wash, resulting in colored residue	**Insufficient lysis**	Insufficient lysis may cause not complete removal of colored residue on SV column membrane. Repeat the procedure after refer to trouble shooting of 'insufficient lysis' of "Low or no recovery".
	Incomplete removal of hemoglobin	In case of DNA preparation from certain animal blood, it is hard to remove hemoglobin from their blood. Carry out additional wash step with buffer BW.
Column clogging	**Sample not homogenized completely**	Confirm the complete lysis of sample in buffer FPL. And make sure to incubate the lysate with occasional vortexing.
	Too much starting sample	Reduce the amount of starting sample.

Facts	Possible Causes	Suggestions
Low $A_{260/280}$	**Sample not homogenized completely**	Confirm the complete lysis of sample in buffer FPL. And make sure to incubate the lysate with occasional vortexing.
Too much degraded DNA	**Starting sample is too old or inappropriately fixed**	Using too old sample or inappropriately fixed sample often results in extreme degradation of purified DNA. If possible, use the fresh sample which fixed within an hour after a surgical resection.
PCR reaction is not performed well with purified DNA	**DNA fragmentation**	Using too old sample or inappropriately fixed sample often results in extreme degradation of purified DNA. It is strongly recommended to design PCR primers to target the fragment as short as possible (< 500 nucleotides). And if possible, use the fresh FFPE sample fixed within 1 hour after a surgical resection.
	Incompletely decrosslinked	FFPE samples are crosslinked between formalin-DNA-protein. The purified crosslinked-DNA can attenuate the processivity of PCR reaction. It is strongly recommended to design PCR primers to target the fragment as short as possible (< 500 nucleotides).

APPENDIX

Protocol for total DNA from FFPE Tissue using Xylene

Before experiment

- *Prepare the heat block or water bath to 56 °C and 90 °C*
- *Prepare xylene*
- *Prepare absolute ethanol*
- *Prepare 1.5 ml and 2.0 ml microcentrifuge tubes*
- *All centrifugation should be performed at room temperature*
- *Buffer FPL and FPB may precipitate at cool ambient temperature If so, dissolve it in 56 °C water bath*

1. **Cut up to 8 sections of 5 - 10 um in thickness from the FFPE sample block.**

   The amount of starting sample should not exceed 8 sections of 10 um in thickness. It is recommended to use 1 ~ 3 sections of 5 ~ 10 um in thickness.

2. **Place the sections in 2.0 ml microcentrifuge tube.**

   Trim the marginal paraffin off from the tissue sections as much as possible.

3. **Add 1200 ul xylene and vortex to mix.**

4. **Incubate at 56°C for 10 min and centrifuge at full speed (>13,000 x g) for 5 min. Carefully discard supernatant by pipetting.**

   Make sure that paraffin thoroughly melts during the incubation step.
   Be careful not to lose any pellet.

5. **Add 1200 ul of absolute ethanol to the pellet to discard residual xylene and mix by vortexing.**

6. **Centrifuge at full speed for 5 min and carefully discard the ethanol by pipetting.**

Do not remove any tissues.

7. **Repeat the steps 5 ~ 6 once.**

8. **Open the tube and incubate at room temperature or 37˚C for 10 ~ 15 min.**

   Residual ethanol may interfere with purification of nucleic acid. Make sure that ethanol in tube has to be evaporated thoroughly.

9. **Add 180 ul of buffer FPL and mix thoroughly by vigorous vortexing.**

10. **Add 20 ul of Proteinase K solution (20 mg/ml, provided) and mix thoroughly by vortexing or pipetting. Incubate at 56˚C for 1 hr.**

    It is essential to mix the components thoroughly for proper lysis.
    Lysis time varies from 1 hr to overnight depending on the type of tissue and the starting amount. The lysate should become translucent without any particles after complete lysis.
    To enhance the lysis efficiency during this incubation step, vortex the tube every 15 min or use shaking incubator or agitator.

11. **Incubate at 90˚C for 1 hr and spin down briefly to remove any drops from inside of the lid.**

    This step allows DNA to be decrosslinked from DNA-Protein crosslinking.
    Cool down to room temperature before proceeding to next step.

12. ***(Optional :)*** **If RNA-free DNA is required, add 4 ul of RNase A solution (100 mg/ml, provided), vortex to mix thoroughly, and incubate for 2 min at room temperature.**

13. **Add 200 ul of buffer FPB to the tube and mix thoroughly by vortexing. Spin down briefly to remove any drops from inside of the lid.**

    Disregard a little residual buffer DP in upper phase, because it will not affect the next procedures. If the lysate volume is larger than 200 ul, the volume of buffer FPB can be adjusted proportionally.

14. Add 200 ul of absolute ethanol (not provided) to the sample, pulse-vortex to mix the sample thoroughly, and spin down briefly to remove any drops from inside of the lid.

If the lysate volume is larger than 200 ul, the volume of ethanol should be adjusted proportionally.

15. Transfer all of the mixture to the SV column carefully, centrifuge for 1 min at 6,000 x g above (>8,000 rpm) and replace the collection tube with new one (provided).

If the mixture has not passed completely through the membrane, centrifuge again at full speed (>13,000 x g) until all of the solution has passed through. Centrifugation at full speed will not adversely affect DNA recovery.

16. Add 600 ul of buffer BW, centrifuge for 1 min at 6,000 x g above (>8,000 rpm) and replace the collection tube with new one (provided).

If the SV column has a colored residue after centrifugation, repeat this step until no colored residue remains. See Trouble shooting guide for detail.
Centrifugation at full speed will not adversely affect DNA recovery.

17. Add 700 ul of buffer TW. Centrifuge for 1 min at 6,000 x g above (>8,000 rpm). Discard the pass-through and reinsert the SV column back into the collection tube.

Centrifugation at full speed will not adversely affect DNA recovery.

18. Centrifuge at full speed (>13,000 x g) for 1 min to remove residual wash buffer. Place the SV column into a fresh 1.5 ml microcentrifuge tube (not provided).

Care must be taken at this step for eliminating the carryover of buffer TW. If a carryover of buffer TW still occurs, centrifuge again for 1 min at full speed with the collection tube before transferring to a new 1.5 ml microcentrifuge tube.
Centrifugation must be performed at full speed (13,000 x g ~ 20,000 x g).

19. Add 50 ul of buffer AE or distilled deionized water. Incubate for 1 min at room temperature. Centrifuge at full speed (>13,000 x g) for 1 min.

Elution volume can be adjusted according to an experiment's purpose.
For long-term storage of purified DNA, eluting in buffer AE is recommended. But EDTA included in buffer AE can inhibit subsequent enzymatic reactions, so you can avoid such latent problem by using distilled deionized water (>pH7.0) or Tris-HCl (>pH8.5).
When using water for elution, check the pH of water before elution.

Ordering Information

GeneAll® *Hybrid-Q™* *for rapid preparation of plasmid DNA*

Products	Scale	Size	Cat. No.	Type
Plasmid Rapidprep	mini	50	100-150	spin
		200	100-102	

GeneAll® *Exprep™* *for preparation of plasmid DNA*

Products	Scale	Size	Cat. No.	Type
Plasmid SV	mini	50	101-150	spin / vacuum
		200	101-102	
		1,000	101-111	
	Midi	26	101-226	spin / vacuum
		50	101-250	
		100	101-201	

GeneAll® *Exfection™*
for preparation of transfection-grade plasmid DNA

Products	Scale	Size	Cat. No.	Type
Plasmid LE *(Low Endotoxin)*	mini	50	111-150	spin / vacuum
		200	111-102	
	Midi	26	111-226	spin / vacuum
		100	111-201	
Plasmid EF *(Endotoxin Free)*	Midi	20	121-220	spin
		100	121-201	

GeneAll® *Expin™* *for purification of fragment DNA*

Products	Scale	Size	Cat. No.	Type
Gel SV	mini	50	102-150	spin / vacuum
		200	102-102	
PCR SV	mini	50	103-150	spin / vacuum
		200	103-102	
CleanUp SV	mini	50	113-150	spin / vacuum
		200	113-102	
Combo GP	mini	50	112-150	spin / vacuum
		200	112-102	

GeneAll® *Exgene™* *for isolation of total DNA*

Products	Scale	Size	Cat. No.	Type
Tissue SV	mini	100	104-101	spin / vacuum
		250	104-152	
	Midi	26	104-226	spin / vacuum
		100	104-201	
	MAXI	10	104-310	spin / vacuum
		26	104-326	
Tissue *plus!* SV	mini	100	109-101	spin / vacuum
		250	109-152	
	Midi	26	109-226	spin / vacuum
		100	109-201	
	MAXI	10	109-310	spin / vacuum
		26	109-326	

GeneAll® *Exgene™* *for isolation of total DNA*

Products	Scale	Size	Cat. No.	Type
Blood SV	mini	100	105-101	spin / vacuum
		250	105-152	
	Midi	26	105-226	spin / vacuum
		100	105-201	
	MAXI	10	105-310	spin / vacuum
		26	105-326	
Cell SV	mini	100	106-101	spin / vacuum
		250	106-152	
	MAXI	10	106-310	spin / vacuum
		26	106-326	
Clinic SV	mini	100	108-101	spin / vacuum
		250	108-152	
	Midi	26	108-226	spin / vacuum
		100	108-201	
	MAXI	10	108-310	spin / vacuum
		26	108-326	
Genomic DNA micro		50	118-050	spin
Plant SV	mini	100	117-101	spin / vacuum
		250	117-152	
	Midi	26	117-226	spin / vacuum
		100	117-201	
	MAXI	10	117-310	spin / vacuum
		26	117-326	
Soil DNA mini	mini	50	114-150	spin
Stool DNA mini	mini	50	115-150	spin
Viral DNA / RNA	mini	50	128-150	spin
FFPE tissue DNA	mini	50	138-150	spin
		250	138-152	

GeneAll® *GenEx™* *for isolation of total DNA without spin column*

Products	Scale	Size	Cat. No.	Type
GenEx™ Blood	Sx	100	220-101	solution
		500	220-105	
	Lx	100	220-301	solution
GenEx™ Cell	Sx	100	221-101	solution
		500	221-105	
	Lx	100	221-301	solution
GenEx™ Tissue	Sx	100	222-101	solution
		500	222-105	
	Lx	100	222-301	solution

Ordering Information

GeneAll® *GenEx™* *for isolation of total DNA*

Products	Scale	Size	Cat. No.	Type
GenEx™ Plant	Sx	100	227-101	solution
	Mx	100	227-201	
	Lx	100	227-301	
GenEx™ Plant *plus!*	Sx	100	228-101	solution
	Mx	50	228-250	
	Lx	20	228-320	

GeneAll® *DirEx™* series
for preperation of PCR-template without extraction

DirEx™	100	250-101	solution
DirEx™ *Fast*-Tissue	96 T	260-011	solution
DirEx™ *Fast*-Cultured cell	96 T	260-021	solution
DirEx™ *Fast*-Whole blood	96 T	260-031	solution
DirEx™ *Fast*-Blood stain	96 T	260-041	solution
DirEx™ *Fast*-Hair	96 T	260-051	solution
DirEx™ *Fast*-Buccal swab	96 T	260-061	solution
DirEx™ *Fast*-Cigarette	96 T	260-071	solution

GeneAll® RNA series *for preperation of total RNA*

RiboEx™	mini	100	301-001	solution
		200	301-002	
Hybrid-R™	mini	100	305-101	spin
Hybrid-R™ Blood RNA	mini	50	315-150	spin
Hybrid-R™ miRNA	mini	50	325-150	spin
RiboEx™ LS	mini	100	302-001	solution
		200	302-002	
Riboclear™	mini	50	303-150	spin
Riboclear™ *plus!*	mini	50	313-150	spin
Ribospin™	mini	50	304-150	spin
Ribospin™ II	mini	50	314-150	spin
		300	314-103	
Ribospin ™ vRD	mini	50	302-150	spin
Ribospin ™ vRD *plus!*	mini	50	312-150	spin
Ribospin ™ vRD II	mini	50	322-150	spin
Ribospin ™ Plant	mini	50	307-150	spin
Ribospin™ Seed / Fruit	mini	50	317-150	spin
Allspin™	mini	50	306-150	spin
RiboSaver™	mini	100	351- 001	solution

GeneAll® *AmpONE™* *for PCR amplification*

Products	Scale	Size	Cat. No.	Type
Taq DNA polymerase		250 U	501-025	(2.5 U/μℓ)
		500 U	501-050	
		1,000 U	501-100	
α-Taq DNA polymerase		250 U	502-025	(2.5 U/μℓ)
		500 U	502-050	
		1,000 U	502-100	
α-Pfu DNA polymerase		250 U	504-025	(2.5 U/μℓ)
		500 U	504-050	
		1,000 U	504-100	
Fast-Pfu DNA polymerase		250 U	505-025	(2.5 U/μℓ)
		500 U	505-050	
		1,000 U	505-100	
Hotstart Taq DNA polymerase		250 U	531-025	(2.5 U/μℓ)
		500 U	531-050	
		1,000 U	531-100	
Taq Premix	96 tubes	20 μℓ	521-200	lyophilized
		50 μℓ	521-500	
		20 μℓ	526-200	solution
		50 μℓ	526-500	
α-Taq Premix	96 tubes	20 μℓ	522-200	lyophilized
		50 μℓ	522-500	
		20 μℓ	527-200	solution
		50 μℓ	527-500	
HS-Taq Premix	96 tubes	20 μℓ	525-200	solution
		50 μℓ	525-500	
		20 μℓ	520-200	lyophilized
α-Pfu Premix	96 tubes	50 μℓ	523-500	solution
Taq Premix (w/o dye)	96 tubes	20 μℓ	524-200	lyophilized
dNTPs mix		500 μℓ	509-020	2.5 mM each
dNTPs set (set of dATP, dCTP, dGTP and dTTP)		1 ml x 4 tubes	509-040	100 mM

* Each dNTPs is available

Ordering Information

GeneAll® *AmpMaster™* *for PCR amplification*

Products	Scale	Size	Cat. No.	Type
Taq Master mix	0.5 ml x 2 tubes		541-010	solution
	0.5 ml x 10 tubes		541-050	solution
α-Taq Master mix	0.5 ml x 2 tubes		542-010	solution
	0.5 ml x 10 tubes		542-050	solution
HS-Taq Master mix	0.5 ml x 2 tubes		545-010	solution
	0.5 ml x 10 tubes		545-050	solution
α-Pfu Master mix	0.5 ml x 2 tubes		543-010	solution
	0.5 ml x 10 tubes		543-050	solution

GeneAll® *HyperScript™* *for Reverse Transcription*

Reverse Transcriptase	10,000 U		601-100	solution
RT Master mix	0.5 ml × 2 tubes		601-710	solution
RT Master mix with oligo $(dT)_{20}$	0.5 ml × 2 tubes		601-730	solution
RT Master mix with random hexamer	0.5 ml × 2 tubes		601-740	solution
RT Premix	96 tubes,	20 μl	601-602	solution
RT Premix with oligo $(dT)_{20}$	96 tubes,	20 μl	601-632	solution
RT Premix with random hexamer	96 tubes,	20 μl	601-642	solution
One-step RT-PCR Master mix	0.5 ml × 2 tubes		602-110	solution
One-step RT-PCR Premix	96 tubes,	20 μl	602-102	solution
First strand Synthesis Kit	50 reaction		605-005	solution
ZymAll™ RNase Inhibitor	10,000 U		605-010	solution
ZymAll™ RNase Inhibitor	4,000 U		605-004	solution

GeneAll® RealAmp™ *for qPCR amplification*

SYBR qPCR Master mix (2X, Low ROX)	200 rxn	20 μl	801-020	solution
	500 rxn	20 μl	801-050	
SYBR qPCR Master mix (2X, High ROX)	200 rxn	20 μl	801-021	solution
	500 rxn	20 μl	801-051	

Products	Size	Cat. No.	
GeneAll® Protein series			
ProtinEx™ Animal cell / tissue	100 ml	701-001	solution
PAGESTA™ Reducing 5X SDS-PAGE Sample Buffer	1 ml × 10 tubes	751-001	solution

GeneAll® STEADi™ *for automatic nucleic acid purification*

STEADi™ 12 Instrument			GST012
STEADi™ 24 Instrument			GST024
STEADi™ Genomic DNA Cell / Tissue Kit	96		401-104
STEADi™ Genomic DNA Blood Kit	96		402-105
STEADi™ Bacteria DNA Kit	96		403-106
STEADi™ Total RNA Kit	96		404-304
STEADi™ Viral DNA / RNA Kit	96		405-322
STEADi™ CFC Seed DNA / RNA Kit	96		406-C02

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