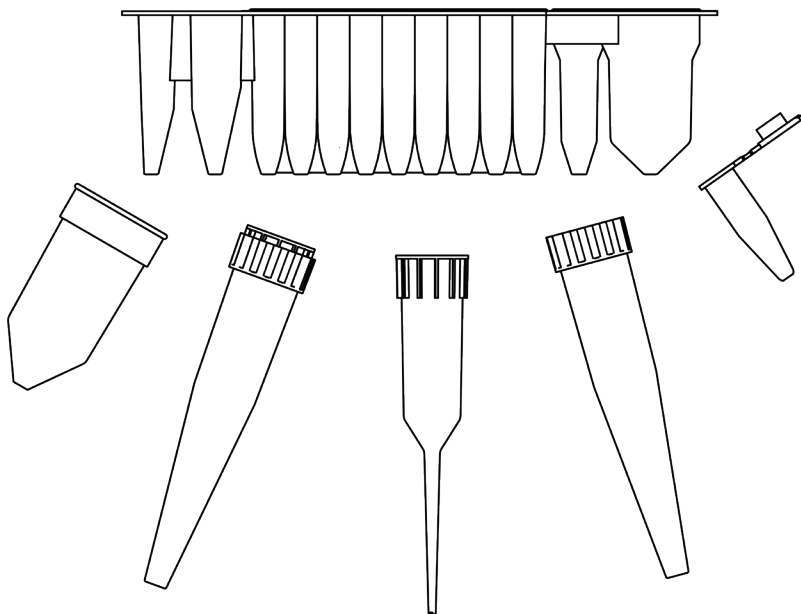




MagCore® Giga Nucleic Acid Extraction Kit User's Manual



Jun 2026

**EN-MagCore® Giga Nucleic Acid Extraction
Kit Manual-1.0.1**



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Intended use

The MagCore® Nucleic Acid Extraction System is an automated nucleic acid purification system consisting of the MagCore® instrument, software, Kit (consumables and reagents).

The MagCore® Nucleic Acid Extraction System is intended to be used by professional users for the purification of nucleic acids from biological samples for in vitro diagnostic purposes.

The MagCore® Nucleic Acid Extraction Kits are intended to be used with MagCore® Nucleic Acid Extraction System.

Principle of the procedure

The nucleic acid isolation procedure is based on the proven MagCore patented technology of cellulose coated magnetic beads technology. After washing off the contaminants, the purified Nucleic Acid is eluted by low salt elution buffer.

The key steps of this isolation procedure are:

- 1. Sample material is lysed, nucleic acids are released, and nucleases are denatured.*
- 2. Nucleic acids bind to the cellulose coated magnetic beads surface due to the chaotropic salt conditions and the high ionic strength of the lysis/binding buffer.*
- 3. Cellulose coated magnetic beads with bound nucleic acids are magnetically separated from the residual lysed sample.*
- 4. Unbound substances, such as proteins, cell debris, and PCR inhibitors are removed by several washing steps.*
- 5. Purified nucleic acids are eluted from the cellulose coated magnetic beads.*

How to Use this product

Before you begin

Sample Materials

Do not process samples with higher volume or cell count than the selected purification protocol is designed to handle. This will lead to reduced yield since the magnetic beads will clump and not bind nucleic acid as efficiently when the viscosity is too high or too much nucleic acid is present.

Control Reactions

Always run appropriate controls with the samples, especially if you want to perform quantification analyses of the eluted nucleic acid samples (e.g., by real-time PCR assays). In order to control the complete process starting from sample preparation to quantification analysis, perform the following controls:

- Positive Control, by using a sample material positive for your target.
- Negative Control, by using a sample material negative for your target.
- Internal Control (IC), by adding a defined amount of a control template to all samples to be purified.

Internal Control

The MagCore® instrument offers the option to add an Internal Control (IC) to the samples during the purification procedure. Including an IC is important to detect a possible impairment of the nucleic acid isolation process.

General Considerations

Precautions

The following procedure is designed to process maximum 8 samples at the same time. The MagCore® instrument can handle all numbers of samples between 1 and 8. For a detailed description of instrument setup and handling, refer to the MagCore® instrument Operator's Manual.

- Store the Reagent Cartridge to +15 to +30°C before use. If you use the reagents at temperatures outside the recommended range, the kit may not work well.
- Document the lot number of the kit in case of complaints or questions for RBC Bioscience Technical Service regarding any component of the kit (reagent cartridges or disposables).
- Make sure you have followed the instructions regarding type and amount of sample material. Wrong type and amount of sample material may cause clumping of MGPs which cannot be detected by the Clot Detection function of the instrument. Clumping of beads may lead to low yield and purity of nucleic acids, cross-contamination, and inhibition of downstream assays (e.g., PCR).
- After the run has finished, carefully inspect the instrument for any signs of spillage. If spillage occurred, clean the instrument as described in the Operator's Manual.
- Some buffers contain guanidinium salts which are hazardous irritants. Do not allow these to come into contact with skin, eyes, or mucous membranes. If contact does occur, wash the affected area immediately with large amounts of water. If necessary, immediately contact your laboratory supervisor and seek medical assistance. When spilling these reagents, dilute the spill with large amounts of water before attempting to clean up the spill.
- Do not allow reagents containing guanidine thiocyanate (lysis and wash buffer well) to contact sodium hypochlorite (bleach) solution or acids. These mixtures produce a highly toxic gas.
- Please notice that you may be required to report serious incidents that have occurred in relation to the device to the manufacturer and the competent authority in which the user and/or the patient is established.

Prevention of Cross-Contamination

To minimize the risk of cross-contamination and to prevent contact with potentially infectious materials, always complete the processes involving sample preparation such as pipetting of blood samples in a designated part of the benchtop or safety hood before starting PCR setup.

To further minimize the risk of contamination, always carry out sample preparation, PCR setup, and the PCR run itself in separate rooms specially designated for each phase in the workflow.

Safety Information Laboratory Procedures

Handle all samples as potentially infectious, using safe laboratory procedures. As the sensitivity and titer of potential pathogens in the sample material varies, the operator must optimize pathogen inactivation by the Lysis/Binding Buffer or take appropriate measures, according to local safety regulations.

RBC Bioscience does not warrant that samples treated with Lysis Buffer are completely inactivated and noninfectious. After sample processing is completed, remove and autoclave all disposable plastics.

- Do not eat, drink or smoke in the laboratory work area.
- Wear protective disposable gloves, laboratory coats, and eye protection when handling samples and kit reagents.
- Do not contaminate the reagents with bacteria, viruses, or nucleases. Use disposable pipettes and nuclease-free pipette tips only to remove aliquots from reagent bottles. Use the general precautions described in the literature.
- Wash hands thoroughly after handling samples and reagents.
- Complete each phase of the PCR/RT-PCR workflow before proceeding to the next phase. For example, you should finish PCR/RT-PCR sample preparation before starting PCR/RT-PCR setup. Sample preparation, PCR/RT-PCR setup and the PCR/RT-PCR run itself should also be performed in separate locations.

Waste Handling

- Discard unused reagents and waste in accordance with country, federal, state, and local regulations.
- Safety Data Sheets (SDS) are available upon request from the local distributor.

Additional Equipment and Reagent required

Additional reagents and equipment required to perform nucleic acid isolations with the MagCore® Nucleic Acid Extraction Kit using the MagCore® instrument:

Standard Laboratory Equipment

- Pipettes and nuclease-free, aerosol-preventive tips to dispense samples into the Sample Tubes
- Centrifuge and suitable tubes
- Heat block for 50 ml reaction tubes (optional: according to protocol)

IVD Symbols Reference

Reference symbol Description of Symbol

	CE mark
	In Vitro Diagnostic Device
	Authorized representative in the European Community
	Manufacturer
	Content sufficient for <n> tests
	Warning: electricity
	Instruction manual must be read before operating
	Consult instructions for use
	Alternate current input
	Use-by Date
	No use period
	Temperature storage conditions 15°C/30°C
	After mixing store at 0°C/8°C
	After opening store at 0°C/8°C
	Catalogue number (product code)
	Lot number
	Model
	Number of aliquots
	Included in the product
	Cartridge code number
	Sterile
	Sterilized using irradiation
	Serial Number
	Fuse

MagCore® Giga Genomic DNA Kit

For purification of genomic DNA from human whole blood.

Applicable models: Giga

Cartridge Code 812

Cat.No. GGD-01 // GGD-02

Kit Contents

Check that the following parts are included in addition to the main unit:

Cat.No. GGD-01 Contents:

Pre-filled Cartridge Reagent.....	6 pcs.
Giga Pipet Tip plus Holder Set.....	6 sets.
Giga Sample Tube.....	6 pcs.
Elution Tube.....	6 pcs.
Proteinase K(11mg).....	3 pcs.
PK Storage Buffer(1.25ml).....	3 pcs.

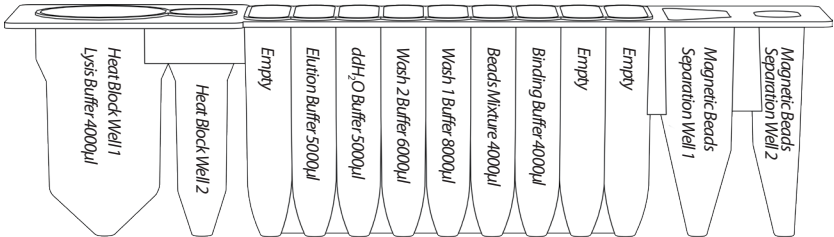
Cat.No. GGD-02 Contents:

Pre-filled Cartridge Reagent.....	36 pcs.
Giga Pipet Tip plus Holder Set.....	36 sets.
Giga Sample Tube.....	36 pcs.
Elution Tube.....	36 pcs.
Proteinase K(150mg).....	1 pcs.
PK Storage Buffer(15ml).....	1 pcs.

Storage and Stability:

- 1. This kit should be stored at room temperature.
 - 2. Proteinase K should be stored at 2-8 °C upon arrival.
 - 3. Shelf Life: 18 Months.
- Note* For long-term storage of DNA/RNA, eluate should be stored at -20°C/-80°C is recommended.

Cartridge Contents :



Description

MagCore® Giga Genomic DNA Kit is designed for purification of total DNA (including genomic, mitochondrial and viral DNA) from whole blood, plasma, serum, buffy coat by using MagCore® auto-extraction instrument. The method uses a pre-filled cartridge which contains chaotropic salt to lyse cells and degrade protein. DNA will bind to cellulose coated magnetic beads. After washing off the contaminants, the purified DNA is eluted by low salt elution buffer. Purified DNA of approximately 20-30 kb in length is suitable for PCR or other enzymatic reactions.

Applications

Using magnetic-particle technology to purify genomic DNA from fresh whole blood. The purified genomic DNA can be directly used for downstream application such as quantitative PCR, restriction enzyme digestion, southern blotting, etc.

Preparation Before Using

Prepare Proteinase K (10 mg/ml)

1. 6 preps: add 1.1 ml PK Storage Buffer to the 11 mg Proteinase K tube and mix by vortexing. Store prepared Proteinase K at 2-8 °C
2. 36 preps: add 15 ml PK Storage Buffer to the 150 mg Proteinase K tube and mix by vortexing. Store prepared Proteinase K at 2-8 °C

Whole Blood Protocol

1. Take a new Giga Sample Tube and add 400 µl of Proteinase K (10 mg/ml) to 4 ml/8 ml of equilibrated whole blood sample.
2. Gently mix to enhance performance; mixing is optional.
3. Put the prepared Giga Sample Tube into the W1 of T-Rack.
4. Put Giga Tip Plus Holder Set into the W3 of T-Rack.
5. Put Elution Tube into the W4 of T-Rack.
6. Run Code 812 program at MagCore®.

Optional Step: RNA Degradation

If RNA-Free genomic DNA is required, perform these optional steps before adding Proteinase K.

1. Add 40 µl RNase A (50 mg/ml; not provided) into the sample lysate.
2. Gently mix to improve uniformity and incubate the sample at room temperature for 20 mins.

Buffy Coat Modify Protocol

RBC Lysis Buffer

150 mM NH₄Cl, 10 mM KHCO₃, 0.1 mM EDTA.

Buffy Coat Preparation by RBC Lysis

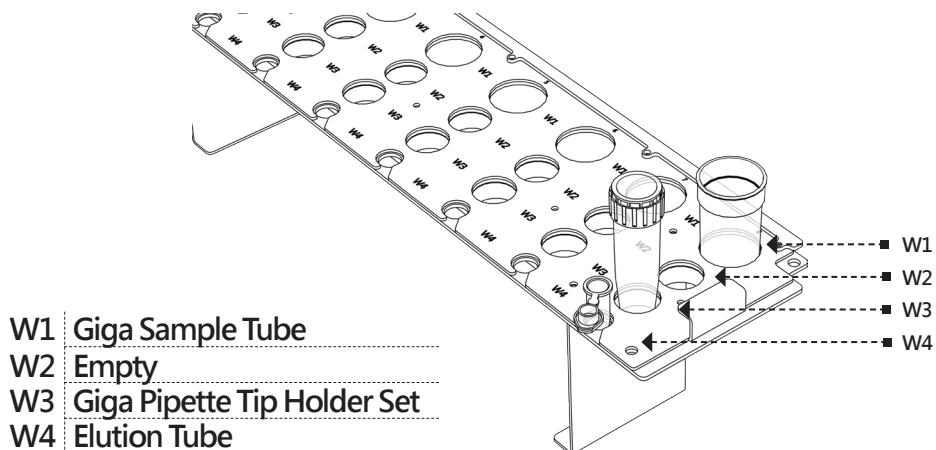
1. Take 5-6 ml whole blood into 15 ml microcentrifuge tube.
Don't take more than 7 ml whole blood sample; it will cause leaking during process.
2. Add 7 ml RBC Lysis Buffer and mix the buffer and whole blood sample by inverting the tube.
3. Shake the mixture at 100 rpm for 5 mins.
4. Centrifuge the mixture at 13,000 rpm for 1 min.
5. Discard supernatant.
6. Repeat steps 2 ~ 5 to wash the sample again.
7. Add 4 ml RBC Lysis Buffer and add 400 µl of proteinase K to resuspend the pellet and transfer into MagCore® Giga Sample Tube.
8. Put the prepared Giga Sample Tube into the W1 of T-Rack.
9. Put Giga Tip Plus Holder Set into the well 3 of T-Rack.
10. Put Elution Tube into the well 4 of T-Rack.
11. Run Code 812 program at MagCore®.

Buffy Coat Preparation by Centrifugation

1. Take 4-8 ml whole blood sample and centrifuge at 1,500 rpm for 10 mins.
2. Use plastic dropper or pipette to take white buffy coat layer in the middle of whole blood sample.
3. Move the buffy coat into new microcentrifuge tube.
4. Take 100-200 µl buffy coat sample into MagCore® Giga Sample Tube and add RBC Lysis Buffer or PBS until 4 ml then add 400 µl of proteinase K.
5. Put the prepared Giga Sample Tube into the W1 of T-Rack.
6. Put Giga Tip Plus Holder Set into the W3 of T-Rack.
7. Put Elution Tube into the W4 of T-Rack.
8. Run Code 812 program at MagCore®.

Note : We suggest to select 400~600 µl elution buffer, it can get better elution efficiency in both of these methods. Normally the concentration is higher than 150~250 ng/µl under such elution volume

Well Position of T-Rack



MagCore® Giga Cell Free DNA Kit

For extraction of free circulating DNA from human plasma or serum.

Applicable models: Giga

Cartridge Code 815

Cat.No. GPD-01 // GPD-02

Kit Contents

Check that the following parts are included in addition to the main unit:

Cat.No. GPD-01 Contents:

Pre-filled Cartridge Reagent.....	6 pcs.
Pipet Tip plus Holder Set.....	6 pcs.
Sample Tube.....	6 pcs.
Elution Tube.....	6 pcs.

Cat.No. GPD-02 Contents:

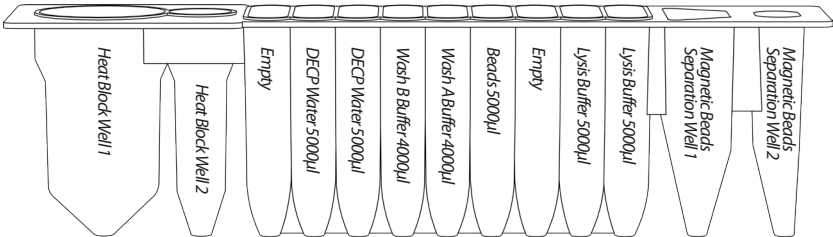
Pre-filled Cartridge Reagent.....	36 pcs.
Pipet Tip plus Holder Set.....	36 pcs.
Sample Tube.....	36 pcs.
Elution Tube.....	36 pcs.

Storage and Stability:

1. This kit should be stored at room temperature.
2. Shelf life 18 months.

Note* For long-term storage of DNA/RNA, eluate should be stored at -20°C/-80°C is recommended.

Cartridge Contents :



Description

MagCore® Giga cell free DNA Extraction Kit is designed for purification of DNA from 8 ml of serum, by using MagCore® auto-extraction instrument. With all the kit components of plastic consumables that are DNase/RNase -Free pretreated and with individual processing track for each loaded sample, this system eliminates all possible cross contamination between samples. Built-in protocol with flexibility in sample source volumes, plasma cfDNA can be extracted using this kit in a fast and economical way.

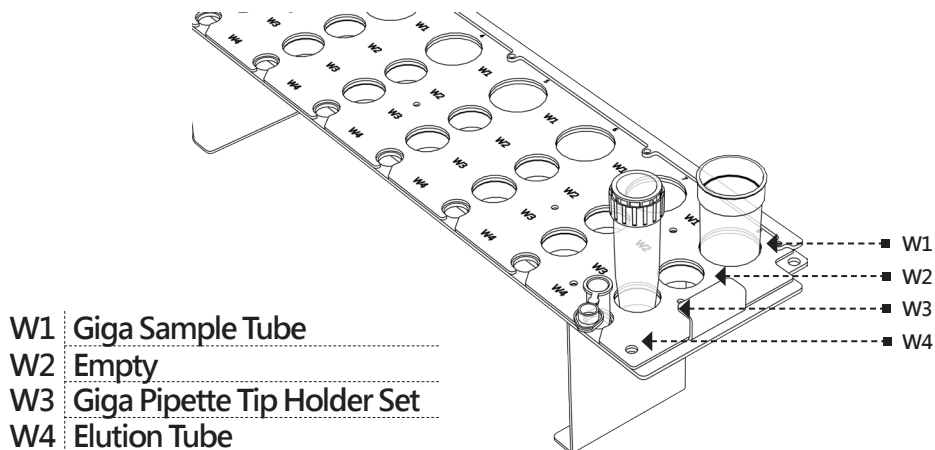
Applications

The purified total nucleic acid is suitable for highly sensitive and quantitative PCR. MagCore® Giga Cell Free DNA Kit has been proven with various genomic analyses as downstream applications.

Protocol

1. Add 8 mL of serum, plasma, into the prepared Sample Tube.
2. Put the prepared Sample Tube into the correct well of T-Rack.
3. Put Elution Tube and Tip Plus Holder Set / Pipette Tip into the correct wells of the T-Rack.
4. Run Code 815 program at Giga.

Well Position of T-Rack



MagCore® Giga Total RNA Kit

For extraction of total RNA from human whole blood/ PAXgene Blood RNA Tube.

Applicable models: Giga

Cartridge Code 861

Cat.No. GRN-02

Kit Contents

Check that the following parts are included in addition to the main unit:

Cat.No. GRN-02 Contents:	
Pre-filled Cartridge Reagent.....	36 pcs.
Pipet Tip plus Holder Set.....	36 pcs.
Sample Tube.....	36 pcs.
Elution Tube.....	36 pcs.
RBC Lysis Buffer (200 ml).....	6 pcs.
RL buffer (60 ml).....	1 pcs.
DNase set.....	2 pcs.

Storage and Stability:

1. This kit should be stored at room temperature.
 2. DNase set should be stored at 2-8°C upon arrival.
 3. Shelf life 18 months.
- Note* For long-term storage of DNA/RNA, eluate should be stored at -20°C/-80°C is recommended.

Cartridge Contents :



Notes: Add 400 µl DNase I working solution before use

Description

MagCore® Giga Total RNA Kit is specially designed for total RNA purification from up to 8mL whole blood/18ml PAXgene Blood RNA Tube. The program provides DNase I treatment to remove residual DNA from contaminating the results. High quality DNA-free RNA can be extracted using this kit along with our RNase-free DNase I.

Applications

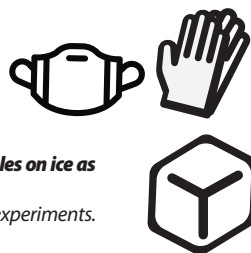
Using magnetic-particle technology to purify total RNA purification from cultured cells, a variety of tissues, whole blood, or PAXgene RNA blood tube. The purified RNA can be directly used for downstream application such as real-time PCR, RT-PCR, cDNA synthesis, etc.

Preparation Before Using

1. β -Mercaptoethanol (β -ME; not provided) must be added to RB Buffer before use. Add 16 μ l of β -ME per 1.6 ml of RL Buffer.
2. Add 550 μ l Nuclease free water to DNase I powder, and invert 10 times gently.
Transfer all DNase I liquid to 1.5 ml Nuclease free tube. Store at 2–8°C for 1 month, –20°C for long term.
3. Prepare DNase I (RNase-free) working solution: add 30 μ l DNase I with 370 μ l DNase reaction buffer.

Important Notes

1. When fresh samples (including whole blood, cells, and tissues) are obtained, samples are subjected to the following protocol as soon as possible (within one day). If you do not extract RNA immediately, lyse the samples in the RL Buffer for stabilization. The samples can be stored at –80°C up to 1 month in the RL Buffer.
2. When doing extraction with MagCore® triXact RNA Kit, always wear a suitable lab coat, disposable gloves, and protective mask. Also, **always keep the samples on ice as much as possible**. Do not talk during the experiment to avoid contamination.
3. Ensure that the experimental environment is suitable for operating RNA experiments. Performing the extraction in the hood is recommended.



Fresh Whole Blood Protocol

1. Follow the important notes for the following step.
2. Add 8 mL human whole blood with 24 mL RBC lysis Buffer in an 50 mL tube (not provided) and mix by inversion. Do not vortex.

Incubate the tube on ice for 10 minutes and invert 2–3 times during incubation.

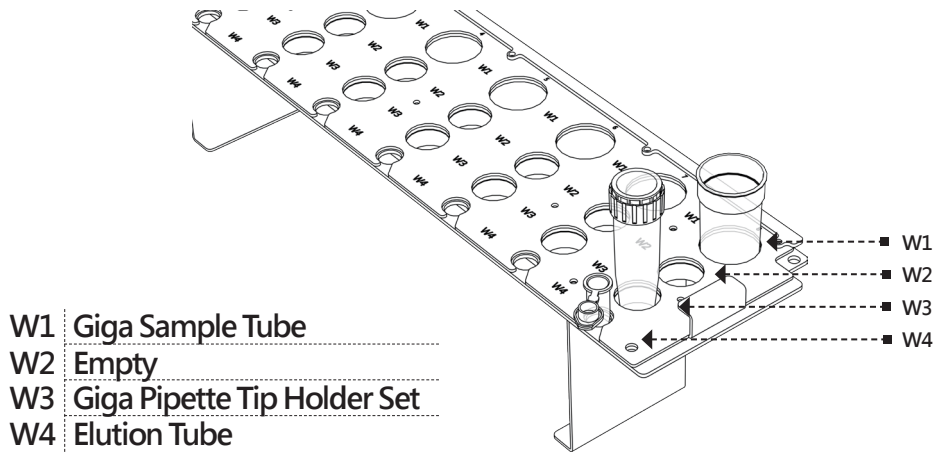
3. Centrifuge for 10 minutes at 500 x g at 4°C and completely discard the supernatant.
4. Add 8 mL RBC lysis Buffer to the cell pellet. Resuspend cells by brief vortexing, keep the samples on ice.
5. Centrifuge for 5 minutes at 500 x g at 4°C and discard the supernatant completely.
6. Add 1600 μ l RL buffer (contain β -ME) to the pellet and mix by vortexing and pipetting.
(Cut the end of pipet tip to make pipetting easier.) (can store up to 1 month at –80°C).
7. Transfer lysate to the Giga Sample Tube.
8. Add 400 μ l DNase I (RNase-free) working solution (contain 30 μ l DNase I) to 861 cartridge magnetic beads separation well 2 bottom.
9. Put the prepared Sample Tube into the correct well of T-Rack.
10. Put Elution Tube and Tip Plus Holder Set / Pipette Tip into the correct wells of T-Rack.
11. Run code. 861 program on MagCore® Giga.

PAXgene Blood RNA Tube Protocol

1. Follow the important notes for the following step.
2. Incubate PAXgene RNA Blood Tube at room temperature for 2 hours before extraction.
3. Add up to 18 ml PAXgene RNA Blood Tube to 50 ml spin tube.
4. Centrifuge for 10 minutes at 4000 x g at room temperature and completely discard the supernatant.
5. Add 1/2 of PAXgene RNA Blood Tube volume of RNase Free Water to the pellet. Resuspend pellet by pipetting.
(For example, add 9 ml RNase Free Water if PAXgene RNA Blood Tube volume is 18 ml.)
6. Centrifuge for 10 minutes at 4000 x g at room temperature and completely discard the supernatant.
7. Add 1600 μ l RL buffer (contain 1% β -ME) to the pellet and mix by pipetting.
(Cut the end of pipet tip to make pipetting easier.)
8. Transfer lysate to the Giga Sample Tube.
9. Add 400 μ l DNase I (RNase-free) working solution (contain 30 μ l DNase I) to 861 cartridge magnetic beads separation well 2 bottom.

10. Put the prepared Sample Tube into the correct well of T-Rack.
11. Put Elution Tube and Tip Plus Holder Set / Pipette Tip into the correct wells of T-Rack.
12. Run code.861 program on MagCore® Giga.

Well Position of T-Rack



Document Revision History

Date	Changes
June 2026 EN-MagCore® Giga Nucleic Acid Extraction Kit Manual-1.0.1	Update following section: • 815kit information. • 861 kit information.



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