Part No.: H-020-000805-00

MGIEasy

Genomic DNA Extraction Prepacked Kit (MGISP-NE384)

Instructions for Use

Version: 3.0

Leading Life Science Innovation

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Research Use Only

Wuhan MGI Tech Co., Ltd.

About the instructions for use

This instructions for use is applicable to MGIEasy Genomic DNA Extraction Prepacked Kit (MGISP-NE384). The version of the instructions for use is 3.0 and the kit version is 1.0.

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Revision history

Version	Date	Description
3.0	June 20, 2024	Added the information on the dried blood spot samples
2.0	January 9, 2024	• Revised the script name and prompt • Revised the temperature control setting
1.0	August 15, 2023	Initial release

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Chapter 1 Introduction

1.1 Product name

MGIEasy Genomic DNA Extraction Prepacked Kit (MGISP-NE384)

1.2 Specifications

Kit name	Model	Cat. No.	Specification
MGIEasy Genomic DNA Extraction Prepacked Kit (MGISP-NE384)	WDP-384	940-000974-00	384 Preps

1.3 Intended use

This set is used to extract, enrich and purify nucleic acids.

1.4 Working principle

By using the unique, high-binding, super-paramagnetic beads, this kit is used to extract high-quality genomic DNA quickly and easily from blood, saliva stored by MGI saliva sample collection kit, fresh saliva, buccal swabs, animal tissues, cells, dried blood spots and other samples. The extracted genomic DNA can be used for various routine applications, including enzyme digestion, PCR, real-time PCR, library preparation, chip hybridization and high-throughput sequencing.

1.5 Main components

Tips
- Do not mixedly use reagents from different batches of kits.
- Store the kit in a dry environment. To store Proteinase K and Magnetic Beads H for a longer time, store these two reagents in a refrigerator at 2 ℃ to 8 ℃.
- That precipitation forms in Buffer LB and Buffer W1 is normal and does not affect the reagent performance. Before use, preheat the reagents for 10 minutes in a water bath at 37 ℃ to dissolve the precipitation and mix the reagents thoroughly.
- Before use, take out all components in the reagent set, equilibrate to room temperature (10 ℃ to 30 ℃) and mix them thoroughly before adding to wells.
- Buffer EB consists of 10 mM Tris-HCl (pH 8.0) and 0.5 mM EDTA (pH 8.0). Please prepare the elution buffer according to your specific needs.

Table 1 MGIEasy Genomic DNA Extraction Prepacked Kit (MGISP-NE384)
Cat. No.: 940-000974-00

Name	Component	Specification	Storage condition	Validity period	Transportation condition
MGIEasy Genomic DNA Extraction Prepacked Kit (MGISP-NE384) Cat. No.: 940-000974-00	Buffer LS	200 μL/plate×4	2 ℃ to 30 ℃	12 months	2 ℃ to 30 ℃
	Buffer LB	300 μL/plate×4			
	Buffer W1	240 μL/plate×4			
	Buffer W2	120 μL/plate×8			
	Buffer EB	150 μL/plate×4			
	Proteinase K	100 μL/plate×1			
	Magnetic Beads H	150 μL/plate×4			

Chapter 2 Applicable device

MGISP-NE384RS Automated Nucleic Acid Extractor

Chapter 3 Sample requirements

3.1 Applicable sample

This product is applicable to blood, saliva stored by MGI saliva sample collection kit, fresh saliva, buccal swabs, amniotic fluid, cells, animal tissues and dried blood spots.

3.2 Sample amount requirements

Sample type		Extraction on MGISP-NE384RS
Blood	Fresh/frozen blood	200 μL
	Anticoagulant blood of poultry, birds, amphibians, or lower organisms	5 μL to 10 μL
Saliva	Saliva/buccal swab stored by MGI saliva sample collection kit	500 μL
	Fresh saliva	200 μL
Cell		≤5×10^6
Amniotic fluid		3 mL to 5 mL
Animal tissue		5 mg to 15 mg
Dried blood spots		3 to 5 pieces, 3 mm in diameter

3.3 Sample storage

- For samples of blood, amniotic fluid, cell and animal tissue that could be tested within 24 hours, store them at 2 ℃ to 8 ℃ . For those that could not be tested within 24 hours, store them at -70 ℃ or below, or in a freezer at -25 ℃ to -15 ℃ . During storage, do not freeze and thaw samples frequently.
- For the fresh saliva sample, use it immediately after sample collection. It is recommended to use the MGI saliva sample collection kit (MGI, Cat. No.: 940-001262-00/1000025954) to collect saliva samples which then could be stored at room temperature.
- For dried blood spots, store it at room temperature after sampling.
- Do not freeze and thaw frozen samples frequently. Otherwise, the DNA quality may decrease.

3.4 Sample transportation

- For samples of blood, amniotic fluid, cell and animal tissue, use the dry ice for transportation for up to 7 days. During transportation, avoid frequent freeze-thaw cycles.
- For samples stored by MGI saliva sample collection kit or dried blood spots, transport them at room temperature.

3.5 Sample safety

- All samples are regarded potentially infectious.
- All samples should be extracted after being inactivated according to relevant national regulations.

Chapter 4 Operation

4.1 Preparing materials

Prepare the following materials:

Table 2 User-supplied materials

Type	Item	Description
Equipment	MGISP-NE384RS Automated Nucleic Acid Extractor	• MGI, Cat. No.: 900-000357-00 • For use in automated extraction
	Mini centrifuge	With a speed no less than 12000 rpm
	Vortex mixer	None
	Plate centrifuge	None
	Pipette	1 mL/200 µL/20 µL/10 µL
Reagent	Absolute ethanol	Analytically pure
	Isopropanol	Analytically pure
	RNase A	• 20 mg/mL • DNase-free
Consumables	Saliva sample collection kit	MGI, Cat. No.: 940-001262-00
		MGI, Cat. No.: 1000025954

Type	Item	Description
Consumables	96-well PCR plates	DNase-free and RNase-free
	Tips	1 mL/200 µL/20 µL/10 µL
	Centrifuge tube	• 5 mL/2 mL/1.5 mL • DNase-free and RNase-free

4.2 Pretreating samples

Pretreat samples according to different types of samples. In automated extraction, there is no need to pretreat blood and saliva samples.

Tips Please thaw and mix the frozen samples thoroughly before use

4.2.1 Cell sample

Perform the following steps:

1. Add cell suspension sample whose extraction volume does not exceed 5×10^6 into a new 1.5 mL centrifuge tube.
   - For cell suspension sample with high concentration, add Buffer LS to dilute the sample to that of less than 5×10^6 cells/mL.
   - For adherent cells, perform the following steps:
     a. Prepare cell suspension from sample. Add 1 mL of sample into a new 1.5 mL centrifuge tube.
     b. Centrifuge the tube in a centrifuge at 10000 rpm for 1 minute.
     c. Remove the supernatant, add 200 µL of Buffer LS into the tube, and vortex it to suspend it completely.
2. Add 20 µL of Proteinase K into the tube, and mix the tube thoroughly by vortexing.
3. Place the tube into a thermomixer compact to incubate it for 30 to 60 minutes at 65 °C with a speed of 1000 rpm to 1200 rpm. When the solution is transparent without visible turbidity, briefly centrifuge the tube and ensure that no precipitate exists at the bottom of the tube.

4.2.2 Amniotic fluid sample

Perform the following steps:

1. Add 3 mL to 5 mL of amniotic fluid sample into a new 5 mL centrifuge tube.

2. Centrifuge the tube in a centrifuge at 6000 rpm for 2 minutes.
3. Remove the supernatant without aspirating the pellet.
4. Add Buffer LS into the tube to bring the final volume to 200 µL. Mix thoroughly by vortexing and briefly centrifuge the tube. Transfer the reagent in the tube to a new 1.5 mL centrifuge tube.
5. Add 20 µL of Proteinase K into the tube, and mix the tube thoroughly by vortexing.
6. Place the tube into a thermomixer compact to incubate it for 30 to 60 minutes at 65 °C with a speed of 1000 rpm to 1200 rpm. When the solution is transparent without visible turbidity, briefly centrifuge the tube and ensure that no precipitate exists at the bottom of the tube.

4.2.3 Animal tissue sample

Perform the following steps:

1. Prepare 5 mg to 15 mg of fresh or frozen tissue sample, use a surgical knife or a pair of surgical scissors to cut the sample as big as a sesame seed and then add them into a new 1.5 mL centrifuge tube.
2. Add 200 µL of Buffer LS into the tube, vortex it to suspend it completely.
3. Add 20 µL of Proteinase K into the tube, and mix the tube thoroughly by vortexing.
4. Place the tube into a thermomixer compact to incubate it for 30 to 60 minutes at 65 °C with a speed of 1000 rpm to 1200 rpm. When the solution is transparent without visible turbidity, briefly centrifuge the tube and ensure that no precipitate exists at the bottom of the tube.

4.2.4 Dried blood spot sample

Perform the following steps:

1. Prepare 3 to 5 pieces of dried blood spots being 3 mm in diameter and add them into a new 2 mL centrifuge tube.
2. Add 200 µL of Buffer LS into the tube, and vortex it to suspend it completely.
3. Add 20 µL of Proteinase K into the tube, and mix the tube thoroughly by vortexing.
4. Place the tube into a thermomixer compact to incubate it for 60 minutes at 65 °C with a speed of 1000 rpm to 1200 rpm.
5. Briefly centrifuge the tube, add 300 µL of Buffer LB into the centrifuge tube and mix the tube thoroughly by vortexing.
6. Place the tube into a thermomixer compact to incubate it for 15 minutes at 65 °C with a speed of 1000 rpm to 1200 rpm.

7. Centrifuge the tube for 1 minute at 12000 rpm in a centrifuge.
8. Transfer 500 µL of supernatant into a deep-well plate.

4.3 Extracting the nucleic acids automatically on MGISP-NE384RS

Tips You can extract the nucleic acids manually or on automation devices. For automated nucleic acid extraction, ensure that you have prepared applicable consumables.

4.3.1 Preparing consumables

According to the following table, prepare consumables for a workflow of automated extraction on MGISP-NE384RS and place them at room temperature until use:

Name	Brand	Cat. No.	Number
96-well tips comb	MGI	1000025661	4

4.3.2 Preparing samples

You can extract 1 to 384 samples on MGISP-NE384RS.

Perform the following steps:

1. Perform different steps according to the sample type.
   - For samples of blood, amniotic fluid, cell, animal tissue and dried blood spots, ensure that the sample is pretreated according to *Pretreating samples on Page 5* and add sample into the plate for sample.
   - For other samples, add it directly into the plate for Buffer LB according to the following table.

     Tips For the saliva sample (with saliva preservative), empty Buffer LB in the plate for Buffer LB and then add the sample into the plate.

Reagent name	Adding volume for each well (µL)		
	Whole blood/ fresh saliva	Blood of poultry, birds, or amphibians	Saliva (with saliva preservative)
Sample	200	*V* (5 to 10)	500
Buffer LS	/	200-*V*	/

Reagent name	Adding volume for each well (μL)		
	Whole blood/ fresh saliva	Blood of poultry, birds, or amphibians	Saliva (with saliva preservative)
Proteinase K	20	20	20
Buffer LB	300	300	/

2. Place the plate on ice until use.

4.3.3 Preparing reagents

Perform the following steps:

1. Remove the prepacked plates from the kit and centrifuge them in a plate centrifuge at 3000 rpm for 1 minute to collect reagents to the bottom of the plates.
2. (Optional) if it is required to remove RNA, add 0.75 μL of RNase A (20 mg/mL) to each well of the plate for Buffer EB.
3. Add absolute ethanol into Buffer W1 according to the label and seal it until use.
4. Add absolute ethanol into Buffer W2 according to the label and seal it until use.

4.3.4 Starting extraction

Perform the following steps:

1. Switch to the | position to power on the device.
2. Turn on the computer and the desktop appears. Double-click the icon of MGISP-NE384RS to run the software.
3. Select **User** and **Real**, and enter the password. Click **Login** to enter the main interface.
4. Click **Initialize** on the top of the interface to start initializing.

   You will be prompted after a successful initialization.
5. Empty the operation deck and close the door.
6. Select **Clean** in the main interface.
7. Click **Start**. The default duration is 20 minutes and you can also set the time as required.

   UV lamps are turned on and air filter starts working.

⚠ CAUTION The ultraviolet radiation is harmful to the human body, so do not open the door after the cleaning starts.

8. Click **Process manage** to enter the process management interface. Perform one of the following steps to configure the script.
   - Click ⊞. Set the parameters according to the following table.

Table 3 Program settings

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Step name	Lysis	Lysis	Beads	Bind	Wash	Wash	Wash	Elution	Release
Position	4	1	2	1	3	4	5	6	2
Volume (μL)	520	520	150	870	600	600	600	150	150
Delay time (s)	0	120	0	0	0	0	0	120	0
Mix	False	True	True	True	True	True	True	True	True
Mix type	/	Magnetic	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Mix rate	/	Middle	Middle	Middle	High	High	High	High	High
Mix time (s)	1	• Dried blood spot samples: 10 • Other samples: 900	10	180	180	120	120	300	5
Collect	True	False	True	True	True	True	True	True	False
Collect mode	Normal	Normal	Cycle	Cycle	Cycle	Cycle	Cycle	Cycle	/
Collect cycle (time)	1	1	2	2	2	2	2	10	/
Collect time (s)	1	1	1	1	1	1	1	1	/
Dialog	False	True	False	False	False	False	False	False	False

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Dialog content	/	• Dried blood spot samples: *Add 400 µL of isopropanol to each sample well of Pos1 plate.* • Other samples: *Add 350 µL of isopropanol to each sample well of Pos1 plate.*	/	/	/	/	/	/	

Tips
- In the pop-up window, click ⌄⌄ and set Pos5 as the stop position of robot arm.
- For dried blood spot samples, you need to modify the script manually, including setting the mixing time in step 2 to 10 seconds, setting the prompt to remind users to add 400 µL of isopropanol to each sample well of Pos1 plate, and setting the temperature of Pos1 in the temperature control settings at 25 ℃ .

Table 4 Temperature control settings

Position	Pos1	Pos6
Temperature	75 ℃ or 25 ℃ (for dried blood spot samples)	56 ℃
Open step	Step1	Step8
Close step	Step2	Step8
Action	Mix	Mix
Order	After	After

Table 5 Position layout

Position	Name
Pos1	Buffer LB+Proteinase K+Sample
Pos2	Magnetic Beads H
Pos3	Buffer W1
Pos4	Buffer W2
Pos5	Buffer W2

Position	Name
Pos6	Buffer EB

- Click  to import the script.

  Tips Before importing the script, ensure that the script file is saved in the local folder named as MGISP-NE384RS.

9. Click  >**Workflow**. Click the drop-down list of **Script** and select **MGIEasy Genomic DNA Extraction Prepacked Kit_V1.0**. Place samples, reagents and consumables according to the following table:

Reagent name	Position
Buffer LB+Proteinase K+Sample	Pos1
Magnetic Beads H	Pos2
Buffer W1	Pos3
Buffer W2	Pos4
Buffer W2	Pos5
Buffer EB	Pos6

10. Place 96-well tips comb according to the sample number.
11. Click **Run**. Select the required lanes and tips comb in the pop-up window. Click **OK**. The device starts extraction according to the following table.

    Tips For dried blood spot samples, you need to modify the script manually, including setting the mixing time in step 2 to 10 seconds, setting the prompt to remind users to add 400 μL of isopropanol to each sample well of Pos1 plate, and setting the temperature of Pos1 in the temperature control settings at 25 ℃ .

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Step name	Lysis	Lysis	Beads	Bind	Wash	Wash	Wash	Elution	Release
Position	4	1	2	1	3	4	5	6	2
Volume (μL)	520	520	150	870	600	600	600	150	150
Delay time (s)	0	120	0	0	0	0	0	120	0

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Mix	False	True	True	True	True	True	True	True	True
Mix type	/	Magnetic	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Mix rate	/	Middle	Middle	Middle	High	High	High	High	High
Mix time (s)	1	• Dried blood spot samples: 10 • Other samples: 900	10	180	180	120	120	300	5
Collect	True	False	True	True	True	True	True	True	False
Collect mode	Normal	Normal	Cycle	Cycle	Cycle	Cycle	Cycle	Cycle	/
Collect cycle (time)	1	1	2	2	2	2	2	10	/
Collect time (s)	1	1	1	1	1	1	1	1	/
Dialog	False	True	False	False	False	False	False	False	False
Dialog content	/	• Dried blood spot samples: *Add 400 µL of isopropanol to each sample well of Pos1 plate.* • Other samples: *Add 350 µL of isopropanol to each sample well of Pos1 plate.*	/	/	/	/	/	/	/

Before step 3, you will be prompted to confirm that you have added 350 µL of isopropanol or 400 µL of isopropanol (only for dried blood spot samples) to each sample well of Pos1 plate. Click **OK** and step 3 starts.

During the workflow, click **Pause** to pause and click **Resume** to resume the workflow if required.

The temperature control settings are as follows:

Position	Pos1	Pos6
Temperature	• Dried blood spot samples: 25 ℃ • Other samples: 75 ℃	56 ℃
Open step	Step1	Step8
Close step	Step2	Step8
Action	Mix	Mix
Order	After	After

12. After the program ends, transfer the 96-well tips comb to the medical waste bag.
13. Immediately remove the 96-well plate from Pos6, seal the plate and store it in a freezer at -20 ℃ .

    You can also transfer DNA product in the 96-well plate from Pos6 to a new plate, seal and store it in a freezer at -20 ℃ .
14. Click  >**Clean.** Empty the operation deck, use dust-free paper moistened with 75% absolute ethanol to clean the operation deck and tray, and close the door.
15. Click **Start**. The default duration is 20 minutes and you can also set the time as required.

    CAUTION The ultraviolet radiation is harmful to the human body, so do not open the door after the cleaning starts.

Chapter 5 Warnings and precautions

- This product is for research use only. Please read the instructions for use carefully before use.
- Before experiment, be sure to be familiar with and master the operation methods and precautions of various devices to be used.
- You should prepare the isopropanol and RNase A (20 mg/mL) before the experiment.
- Please use recommended consumables for experiment.
- Buffer EB consists of 10 mM Tris-HCl (pH 8.0) and 0.5 mM EDTA (pH 8.0). Please prepare the elution buffer according to your specific needs.
- Direct contact with skin and eyes should be avoided for all samples and reagents. Do not swallow. If accidental ingestion occurs, please get medical attention immediately. If skin exposure occurs, rinse with large amounts of water and get medical attention if irritation persists.

- All samples and wastes should be disposed of in accordance with relevant regulations.
- Do not use expired products.

Appendix 1 Manufacturer information

Manufacturer	Wuhan MGI Tech Co., Ltd.
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