

NUCQX® Magnetic Bead-Based Tissue Genomic DNA Extraction Kit

Cat. no. LM102112

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Product Information

Cat. No.	Product name	Pack size
LM102112	NUCQX® Magnetic Bead-Based Tissue Genomic DNA Extraction Kit	16 T (pre-aliquoted)
		96 T (pre-aliquoted)
		20 T (bulk)
		100 T (bulk)
		500 T (bulk)

Pre-aliquoted (16 T/96 T) formats are supplied ready-loaded on plates for direct loading onto the corresponding automated extractor; bulk (non-aliquoted) formats (20 T/100 T/500 T) are supplied as bottled reagents. Please state the required format and pack size when ordering.

Kit Contents

Comp. No.	Component	16 T (pre-aliquoted)	96 T (pre-aliquoted)	20 T (bulk)	100 T (bulk)	500 T (bulk)
1	Lysis Buffer	55 mL	55 mL	11 mL	55 mL	275 mL
2	Binding Buffer	33 mL	33 mL	7 mL	33 mL	165 mL
3	Magnetic Beads	96-well plate × 6	96-well plate × 1	11 mL	55 mL	275 mL
4	Washing Buffer I	—	96-well plate × 1	11 mL	55 mL	275 mL
5	Washing Buffer II	—	96-well plate × 1	22 mL	110 mL	275 mL
6	Washing Buffer II	—	96-well plate × 1	—	—	275 mL
7	Elution Buffer	—	96-well plate × 1	4 mL	20 mL	60 mL
8	Proteinase K	1.2 mL	1.2 mL	200 µL	1.2 mL	1.2 mL × 5

User-supplied reagents (not included in the kit): isopropanol, RNase A (10 mg/mL).

Storage

All components of the kit are stored at room temperature (10–30 °C). The shelf life is 12 months.

Applicable Sample Types

Suitable for fresh or frozen animal muscles, internal organs and other tissues.

Samples to be extracted within 1 day can be stored at 2–8 °C; samples to be extracted within 1 week can be stored at –20 °C; if there is no freezing condition, soak and store in absolute ethanol.

Applicable Instruments

Instrument model	Pre-aliquoted 16 T	Pre-aliquoted 96 T	Bulk 20 T	Bulk 100 T	Bulk 500 T
S-16	✓	—	—	—	—

Instrument model	Pre-aliquoted 16 T	Pre-aliquoted 96 T	Bulk 20 T	Bulk 100 T	Bulk 500 T
S-48	—	—	—	✓	—
S-96	—	✓	—	—	—
N-96	—	—	—	—	—

Applicable to the S-96, S-48 and N-96 automated nucleic acid extractors; bulk (non-aliquoted) formats can also be processed manually with a bench-top magnetic separation rack.

Introduction

NUCQX® Magnetic Bead-Based Tissue Genomic DNA Extraction Kit is a nucleic acid extraction kit based on biological nanomagnetic beads. The main principle is to use the functional groups on the surface of functional biological magnetic beads to enrich nucleic acids from sample lysis products onto the surface of the magnetic beads, and then use a magnetic separation device to separate the magnetic beads, so as to quickly separate and purify nucleic acids. No organic reagents such as phenol and chloroform are used in the whole process, which is safe and non-toxic. In addition, the paramagnetic biological nanomagnetic beads are suitable for high-throughput automated extraction.

Notes Please be sure to read this precaution before using the kit.

1. This product is for scientific research use only. Not for use in diagnostic or clinical procedures.
2. The nucleic acids extracted by this kit may contain water-soluble impurities, and the extraction results may be affected by the sample, detection instruments and operating personnel.
3. Safety protection during operation: sample extraction shall be carried out in the specified laboratory area; wear protective clothing, disposable gloves and masks. Items that have direct contact with samples shall be disinfected before disposal or reuse.
4. Before the experiment, disinfect the S-96, N-96 and S-48 automated nucleic acid extractors with ultraviolet light, and regularly clean the experimental bench and dedicated pipettes for sample extraction with 75% ethanol.
5. All materials in contact with the reagents shall be dry and clean to prevent contamination.
6. Precipitation may form in the Lysis Buffer and Magnetic Beads, which is a normal phenomenon. Place the reagents in a 65 °C oven or water bath until the precipitate dissolves, then mix well before use.

Protocol

A. Reagent Dispensing and Instrument Positions (Automated Extraction)

For non-pre-aliquoted reagents, aliquot each component according to the table below and label clearly (shake thoroughly before use). This step is not required for pre-aliquoted reagents.

Component	Loading volume	96 T — station	16 T — plate layout
Sample	—	Station 1	Columns 1/7
Magnetic Beads	500 µL/well	Station 2	Columns 2/8
Washing Buffer I	500 µL/well	Station 3	Columns 3/9
Washing Buffer II	500 µL/well	Station 4	Columns 4/10
Washing Buffer II	500 µL/well	Station 5	Columns 6/12
Elution Buffer	100 µL/well	Station 6	Columns 5/11

Table 1: Programme for Medino S-96 Automatic Nucleic Acid Extractor

Step	1	2	3	4	5	6	7	8
Station	1	2	1	3	4	5	6	2
Name	—	Nucleic Acid Adsorption	Nucleic Acid Adsorption	Deproteinization & Rinsing	Deproteinization & Rinsing	Deproteinization & Rinsing	Elution	Magnetic Bead Discarding
Waiting time	0	0	0	0	0	0	3 min	0
Mixing time	0	1 min	10 min	2 min	2 min	2 min	5 min	1 min
Mixing speed	6	6	6	6	6	6	1	6
Magnetic adsorption time	0	1 min	1 min	1 min	1 min	1 min	1 min	0
Temperature	25 °C (Lysis)	25 °C (Lysis)	25 °C (Lysis)	65 °C (Elution)	65 °C (Elution)	65 °C (Elution)	4 °C (Storage)	4 °C (Storage)

Table 2: Programme for Medino S-48 Automatic Nucleic Acid Extractor

Step	1	2	3	4	5	6	7
Station	2	1	3	4	6	5	2
Waiting time	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:03:00	0:00:00
Mixing mode	2	2	2	2	2	2	2
Mixing time	0:01:00	0:10:00	0:02:00	0:02:00	0:02:00	0:05:00	0:01:00
Magnetic adsorption time	0:01:00	0:01:00	0:01:00	0:01:00	0:01:00	0:01:00	0:00:00
Volume	500 µL	1,000 µL	500 µL	500 µL	500 µL	100 µL	500 µL
Temperature	—	25 °C	—	—	—	65 °C	—

Pause is "No" for all steps.

Protocol (continued)

Table 3: Programme for Medino N-96 Automatic Nucleic Acid Extractor

Step	1	2	3	4	5	6	7
Station	2	1	3	4	5	6	2
Waiting time	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:03:00	0:00:00
Mixing mode	2	2	2	2	2	2	2
Mixing time	0:01:00	0:10:00	0:02:00	0:02:00	0:02:00	0:05:00	0:01:00
Magnetic adsorption time	0:01:00	0:01:00	0:01:00	0:01:00	0:01:00	0:01:00	0:00:00
Volume	500 µL	1,000 µL	500 µL	500 µL	500 µL	100 µL	500 µL
Temperature	—	25 °C	—	—	—	65 °C	—

Pause is "No" for all steps.

B. Automated Extraction Procedure

1. Turn on the instrument power. After the instrument completes its self-test, set the programme parameters according to the corresponding instrument model (see Tables 1–3 above).
2. (Omit for pre-aliquoted reagents.) For non-pre-aliquoted reagents, aliquot each component as shown in the reagent dispensing table above, and label clearly (shake thoroughly before use).

3. Take an appropriate amount of animal tissue (30–50 mg fresh weight), cut it into small pieces, put it into a 2 mL centrifuge tube, add steel beads, freeze it with liquid nitrogen, and disrupt it with a tissue disruptor.
4. Add 400 µL Lysis Buffer and 10 µL Proteinase K (20 mg/mL) into the centrifuge tube, shake and mix well, then place it at 65 °C for lysis for 45 min.
5. (Optional step.) If RNA removal is required, add 5 µL RNase A (10 mg/mL), pipette and mix well, and place at room temperature for 10 min.
6. Centrifuge the tube at 12,000 rpm for 2 min, transfer 300 µL supernatant to the sample well of the reagent plate, then add 300 µL Binding Buffer and 400 µL isopropanol to each sample well.
7. Place the corresponding well plate on the corresponding station of the instrument (before using the pre-aliquoted well plate, invert and mix several times, then gently flick the well plate to concentrate all the solution at the bottom of the well plate, and carefully tear off the sealing aluminium film to avoid liquid splashing during vibration), and run the programme.
8. After the programme is completed, the instrument stops automatically. The deep-well plate of Elution Buffer contains the extracted nucleic acid samples, which can be used directly for downstream experiments. For long-term storage, seal the plate or transfer the eluate to a new container and store at –20 °C.

C. Manual Extraction Protocol

1. Take an appropriate amount of animal tissue (30–50 mg fresh weight), cut it into small pieces, put it into a 2 mL centrifuge tube, add steel beads, freeze it with liquid nitrogen, and disrupt it with a tissue disruptor.
2. Add 400 µL Lysis Buffer and 10 µL Proteinase K into the centrifuge tube, shake and mix well, then place it at 65 °C for lysis for 45 min.
3. Transfer 500 µL Magnetic Beads into a 1.5 mL centrifuge tube (to ensure complete resuspension of magnetic beads, shake thoroughly and mix well before aspiration), place the tube on a magnetic rack and let it stand for 1 min, then aspirate all the supernatant, and keep the magnetic beads for later use.
4. (Optional step.) If RNA removal is required, add 5 µL RNase A (10 mg/mL), pipette and mix well, and place at room temperature for 10 min.
5. Centrifuge the tube at 12,000 rpm for 2 min, transfer 300 µL supernatant to the 1.5 mL tube with magnetic beads reserved from step 3, then add 300 µL Binding Buffer and 400 µL isopropanol. Shake and mix well, then let it stand for 10 min, mixing well 3 times during the period.
6. Place the tube on a magnetic rack and let it stand for 1 min. During this period, invert the magnetic rack repeatedly 5–6 times so that any magnetic beads on the tube cap are adsorbed. Carefully aspirate the liquid on the tube cap and in the tube with a pipette.
7. Take the tube off the magnetic rack, add 500 µL Washing Buffer I, shake and mix for 1 min, then place it on the magnetic rack for 1 min, inverting the rack repeatedly 5–6 times. After the magnetic beads are completely adsorbed, carefully aspirate the liquid on the tube cap and in the tube.
8. Add 500 µL Washing Buffer II, and repeat step 6 once, following the method of step 6.
9. Add 500 µL Washing Buffer II again, and repeat step 6 once more, following the same method.
10. Open the tube cap and air-dry at room temperature for 5 min until ethanol is completely volatilised (both residual ethanol and over-drying will affect nucleic acid elution efficiency in the next step).
11. Take the tube off the magnetic rack, add 100 µL Elution Buffer, shake and mix well to completely immerse the magnetic beads in the elution buffer, then incubate at 65 °C for 10 min, mixing well 3 times during incubation.
12. After incubation, place the tube on a magnetic rack for 1 min. Once the magnetic beads are completely adsorbed, carefully transfer the liquid to a new clean tube with a pipette (without aspirating the beads).

The resulting solution is the nucleic acid sample. The sample can be used directly for downstream experiments, or stored long-term at $-20\text{ }^{\circ}\text{C}$.