Mag Beads Swab & Saliva Genomic DNA Extraction Kit

【Product Name】

Mag Beads Swab & Saliva Genomic DNA Extraction Kit

【Package Specifications】

50T/box（Art.No.GP211-50），100T/box（Art.No.GP211-100），
300T/box（Art.No.GP211-300），500T/box（Art.No.GP211-500）

【Intended Use】

This product is suitable for the extraction of genomic DNA from oral swabs and saliva.

【Detection Principle】

DNA binds to the surface of Magbeads coated with silicon under high salt conditions. After multiple washes to remove impurities such as proteins, DNA is eluted under low salt conditions, resulting in high-purity genomic DNA.

【Main Components】

Components	GP211-50	GP211-100	GP211-300	GP211-500
Preservative Fluid	27mL	53mL	158mL	260mL
Binding Buffer	11mL	21mL	63mL	105mL
Washing Buffer	32mL	63mL	190mL	315mL
Proteinase K	1.05mL	1.05mL*2	6mL	10.5mL
Bead Suspension	1.05mL	1.05mL*2	6mL	10.5mL
Eluant	6mL	11mL	32mL	50mL

【Storage Conditions and Shelf Life】

The magnetic bead suspension should be stored at 2-8°C, while Proteinase K should be stored at temperatures below 4°C. Other reagents should be stored at room temperature. All reagents have a shelf life of one year. Transportation is permissible at temperatures ranging from 4 to 37°C, for a duration not exceeding 14 days.

【Optional Reagents】

RNase A (100mg/mL) (Catalog No: RBX001-2); Nucleic Acid Precipitant (20mg/mL) (Catalog No: RBX002)

【User-provided Reagents and Equipment】

1. Equipment: Nucleic acid extractor, 2.2mL 96-well deep plates (U-bottom), magnetic rod covers, magnetic racks, vortex oscillators, constant temperature oscillators, etc.
2. Reagents: Isopropanol, 80% ethanol

【Sample Requirements】

1. Suitable sample types: Oral swabs and saliva, among others.
2. Storage requirements for use: It is preferable to use fresh samples of swabs and saliva, or samples stored at 4°C for less than 3 days, and avoid using samples that have undergone more than 3 freeze-thaw cycles.

【Precautions】

1. The magnetic beads must not be frozen, and the magnetic bead suspension should be thoroughly mixed before use.
2. If using RNase A or nucleic acid precipitant, they should be stored at -20°C to avoid repeated freeze-thaw cycles, and it is recommended to aliquot and store.

【Automated Operation Steps for 16/32-Channel Nucleic Acid Extractor】

1. Sample Preparation:

Add the specified amounts listed in the table to each corresponding well of a 96-well plate, which can simultaneously process 16/32 samples.

Position	1、7	2、8	3、9	4、10	5、11	6、12
Reagent	Isopropanol（300μL）	Beads（20μL）Water（80μL）	Washing Buffer（600μL）	80% Ethanol（600μL）	80% Ethanol（600μL）	Eluant（100μL）

2. Sample Preparation

1) Saliva Sample: Transfer 100-400μL of saliva sample to a 2.0mL centrifuge tube (if less than 400μL, supplement with swab storage solution to reach 400μL).

2) Dry Swab Sample: Cut off the cotton head of the swab with scissors or break the plastic handle, transfer it to a 2.0mL centrifuge tube, and add 500μL of storage solution.

3) Swab Sample with Storage Solution: Proceed directly with the subsequent experimental steps

Note: If the storage solution exceeds 500μL, the subsequent experimental binding solution and isopropanol volumes should be increased proportionally.

3. Lysis

1) Add 200μL of binding solution and 20μL of proteinase K solution to the prepared samples, and vortex thoroughly.

2) Incubate the samples at 60°C for 20 minutes, vortexing every 5 minutes (alternatively, incubate at 60°C with constant shaking for 20 minutes). After incubation, briefly centrifuge at low speed, collect the liquid droplets from the inside of the tube cap, and set aside.

Note: If RNA removal is required, add 4μL of RNase A (100mg/mL) to the above mixture.

4. Automated Extraction

1) Transfer all supernatants from the lysed swab or saliva samples to the 1st and 7th columns of a 96-well plate. Place the prepared 96-well sample plate into a QP-AUT-16 or QP-AUT-32 nucleic acid extractor (or other similar types of nucleic acid extractors) and insert the magnetic rod cover.

2) Open the instrument's operating program, select the appropriate program, and click "Run" to start the extraction program.

Note: It is recommended to add 1μL of nucleic acid precipitant to the 1st and 7th columns of the plate to increase the yield of genomic DNA from trace nucleic acid samples.

5. Nucleic Acid Transfer

Once the program is complete, remove the 96-well plate and transfer the eluate to a clean centrifuge tube or PCR plate. Label it appropriately, store at -20°C for future use, and discard the 96-well plate at this point.

The parameters for the 32-channel nucleic acid extractor (QP-AUT-32) program are set as follows

Step	Site	Name	Waiting time(min)	Mixing tim（min）	Suction time(sec)	Volume (μL)	Mixing velocity	Temperature
1	2	Transfer Beads	0	0	60	100	3	OFF
2	1	Binding	0	10	60	900	3	OFF
3	3	Washing 1	0	2	40	600	3	OFF
4	4	Washing 2	0	2	40	600	3	OFF
5	5	Washing 3	0	2	40	600	3	OFF
6	6	Elution	2	6	60	100	3	60℃
7	5	Abandon beads	0	1	0	600	3	OFF

【Automated Operation Steps for 96-Channel Nucleic Acid Extractor】

1. Sample Preparation

Add the specified amounts listed in the table to each corresponding well of a 96-well plate, which can simultaneously process 96 samples.

Position	1	2	3	4	5	6
Reagent	Isopropanol（300μL）	Beads（20μL） Water（80μL）	Washing Buffer（600μL）	80% Ethanol（600μL）	80% Ethanol（600μL）	Eluant（100μL）

2. Sample Preparation

1) Saliva Sample: Transfer 100-400μL of saliva sample to a 2.0mL centrifuge tube (if less than 400μL, supplement with swab storage solution to reach 400μL).

2) Dry Swab Sample: Cut off the cotton head of the swab with scissors or break the plastic handle, transfer it to a 2.0mL centrifuge tube, and add 500μL of storage solution.

3) Swab Sample with Storage Solution: Proceed directly with the subsequent experimental steps (Note: If the storage solution exceeds 500μL, the subsequent experimental binding solution and isopropanol volumes should be increased proportionally).

3. Lysis

1) Add 200μL of binding solution and 20μL of proteinase K solution to the prepared samples, and vortex thoroughly.

2) Incubate the samples at 60°C for 20 minutes, vortexing every 5 minutes (alternatively, incubate at 60°C with constant shaking for 20 minutes). After incubation, briefly centrifuge at low speed, collect the liquid droplets from the inside of the tube cap, and set aside.

Note: If RNA removal is required, add 4μL of RNase A (100mg/mL) to the above mixture.

4. Automated Extraction

1) Transfer all supernatants from the lysed swab or saliva samples to the 1st columns of a 96-well plate. Place the prepared 96-well sample plate into a QP-AUT-96 nucleic acid extractor (or other similar types of nucleic acid extractors) and insert the magnetic rod cover.

2) Open the instrument's operating program, select the appropriate program, and click "Run" to start the extraction program.

5. Nucleic Acid Transfer

Once the program is complete, remove the 96-well plate and transfer the eluate to a clean centrifuge tube or PCR plate. Label it appropriately, store at -20°C for future use, and discard the 96-well plate at this point.

The parameters for the 96-channel nucleic acid extractor (QP-AUT-96) program are set as follows

Procedure	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
Station	2	1	3	4	5	6	5
Waiting time	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:02:00	00:00:00
Mixed model	3	3	3	3	3	3	3
Mixing time	00:00:30	00:10:00	00:02:00	00:02:00	00:02:00	00:06:00	00:00:30
Suspend	No	No	No	No	No	No	No
Suction time	00:01:00	00:01:00	00:01:00	00:01:00	00:01:00	00:01:00	00:00:00
Volume	300μL	900 μL	600 μL	600 μL	600 μL	100 μL	600 μL
Temperature	—	—	—	—	—	60°C	—

【Manual Single-Tube Operation Steps】

1. Sample Preparation: Refer to Step 2 in the "Instrument Automated Extraction Steps."

2. Lysis: Refer to Step 3 in the "Instrument Automated Extraction Steps."

3. DNA Binding: Transfer all supernatant to a new centrifuge tube, add 300μL of isopropanol, 20μL of magnetic bead suspension, vortex thoroughly, and incubate at room temperature on a shaking mixer for 5 minutes.

Note: It is recommended to add 1μL of nucleic acid precipitant to increase the yield of genomic DNA from trace nucleic acid samples.

4. Magnetic Separation: Place the centrifuge tube on a magnetic rack, invert 2-3 times, let the magnetic beads fully adsorb, and remove the supernatant completely (keep the centrifuge tube fixed on the magnetic rack throughout the process, avoiding contact with the magnetic beads).

5. Washing: Remove the centrifuge tube from the magnetic rack, add 600μL of wash buffer, close the tube cap tightly, vortex for 10 seconds to ensure thorough mixing of the magnetic beads, then vortex for 1-2 minutes and perform magnetic separation.

6. 80% Ethanol Wash: Remove the centrifuge tube from the magnetic rack, add 600μL of 80% ethanol, close the tube cap tightly, vortex for 10 seconds to ensure thorough mixing of the magnetic beads, then vortex for 1-2 minutes and perform magnetic separation.

7. Second 80% Ethanol Wash: Repeat the previous step (step 6) for a second wash with 80% ethanol.

8. Ethanol Removal: Place the centrifuge tube on the magnetic rack and air dry in a fume hood for 3-5 minutes (until the surface of the magnetic beads is no longer shiny).

9. Elution: Remove the centrifuge tube, add 100μL of elution buffer, vortex for 20 seconds to ensure thorough mixing of the magnetic beads with the elution buffer, incubate the tube in a 60°C water bath for 10 minutes, vortex twice during this period (alternatively, incubate at 60°C with constant shaking for 10 minutes).

10. Nucleic Acid Transfer: Place the centrifuge tube on the magnetic rack and let it stand for 1 minute. After the magnetic beads are fully adsorbed, transfer the supernatant to a new centrifuge tube and store at -20°C for future use.

【Performance Specifications】

This kit can extract 0.5-5μg of genomic DNA from swab samples and 1-10μg of genomic DNA from saliva samples.

【Basic Information】

Version Number: 1.1

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