Magnetic Genomic DNA Extraction Kit

Catalog: ABD-01001 ABD-01002 ABD-0196A ABD-0196B ABD-0160C

【Introduction】

AvanBio Genomic Magnetic DNA Extraction Kit is used for extraction of DNA from blood, cells, saliva, tissues, and other biological samples.

The Kit contains superparamagnetic nanoparticles which are efficiently bound to nucleic acids and uses a safe and eco-friendly extraction system. The magnetic beads are coated through a unique process, enabling strong binding with nucleic acid. The experiment procedure is simple and efficient: 1) add sample to a lysis-extraction solution to enable cell lysis, DNA release and DNA binding to magnetic beads in one step; 2) apply magnetic force enabling easy wash of the beads with buffers; 3) elution of DNA from the beads using water or TE buffer.

Extracted DNA can be directly used for gene sequencing, digestion, PCR amplification, library construction, Southern hybridization and other follow-up experiments.

【Product Features】

High-speed: complete DNA extraction within 30 min

High yield: typically 1-10 μg DNA extracted from 200 μl of whole blood

High purity: OD260/280 = 1.6-1.9; OD260/230> 2.50

Convenience: whole procedure performed at room temperature, no sample digestion using protease or RNaseA

Eco-friendly: do not contain hazardous organic solvents, such as phenol or chloroform

Biosafety: cell lysis, protein deactivation, and DNA release occur at the first step; therefore, virus and bacteria, if any in the samples, are deactivated.

Compatibility: compatible with various anticoagulants (EDTA, ACD, Heparin）

Automation: no liquid-liquid mixing and separation process; therefore, the whole procedure can be easily automated

【Components】

Catalog No.	*ABD-01001 (100 preps)*	*ABD-01002 (500 preps)*	*ABD-0196A (96 preps)*	*ABD-0196B (96 preps)*	*ABD-0160C (60 preps)*
Format	Bottles	Bottles	96-well standard plates	96 deep-well plates	Individual strips
Magnetic beads	5 ml	25 ml			
Lysis-binding buffer	80 ml	200 ml × 2			
Washing solution I	200 ml	200 ml × 5	Pre-packed with magnetic beads and all reagents[b]		
Washing solution II	200 ml	—[a]			
Elution solution	15 ml	—[a]			

[a] prepared by user: Washing solution II (75% ethanol in water) and elution solution (TE buffer pH7.5-8.5 or sterile water)

[b] Convenience: Only need to load samples, and the plates are ready for extraction using a variety of automation instruments. Please see the Automation procedure and setup for ABD-0196A, ABD-0196B and ABD-0160C in Appendices I, II, and III of the manual, respectively.

【Storage and Expiration】

ABD-01001 and ABD-01002: Elution solution should be stored at 2-8°C; the other reagents are stored at room temperature. Expiration: 2 years;

ABD-0196A, ABD-0196B and ABD-0160C: stored at room temperature. Expiration: 1 year.

【Companion Device】

Magnetic separation rack or automated magnetic particle processors

【Experiment Procedure】

1. Transfer 200 µl sample (whole blood, plasma, serum, saliva, etc.) into a 2 ml Eppendorf tube.
2. Add 700µl Lysis-binding buffer, 50µl bead suspension, place the sample on a rotary mixer and mix for 20min, DNA is released from cells and binds to the beads.
3. Adsorb beads using a magnetic separator, discard the supernatant.
4. Add 700µl washing solution I and mix with beads, transfer the solution containing beads to a clean Eppendorf tube; mix for 30s, adsorb beads and discard the supernatant.
5. Add 700µl washing solution I, mix with beads for 30s, adsorb beads and discard the supernatant.
6. Repeat step 5 using 700µl washing solution II.
7. Add 700µl washing solution II, mix with beads for 30s, transfer the liquid containing the beads to a clean Eppendorf tube. Adsorb beads and discard the supernatant. Let beads stand for 3-6min to remove residual ethanol.
8. Add 100µl elution solution (TE buffer or H_2O), mix with beads for 5min to release DNA from beads.
9. Adsorb beads and transfer supernatant containing genomic DNA to a clean Eppendorf tube for subsequent testing or DNA experiments.

Note:

a. Instruction for pre-treatment of cultured cells:
   Wash cells adherent to a 3.5mm culture plate (about 10^6 cells) with PBS. Add 200µl TritonX-100, pipette several times, and transfer the mixture of cells and PBS to a 1.5ml Eppendorf tube. The remaining experimental procedure is the same as described above.
b. Instruction for pre-treatment of tissue samples:
   Add 5-50mg tissue sample and 1ml lysis-extraction solution into a tissue homogenizer. After homogenization, transfer the homogenate to a 1.5ml Eppendorf tube. Add 50µl bead suspension, place the sample on a rotary mixer and mix for 20min, DNA is released from cells and binds to the beads. The remaining experimental procedure is the same as described above.
c. Instruction for pre-treatment of blood cells with plasma removed:
   Use water (1:1) to dilute blood cells prior to extraction. The remaining experimental procedure is the same as described above.

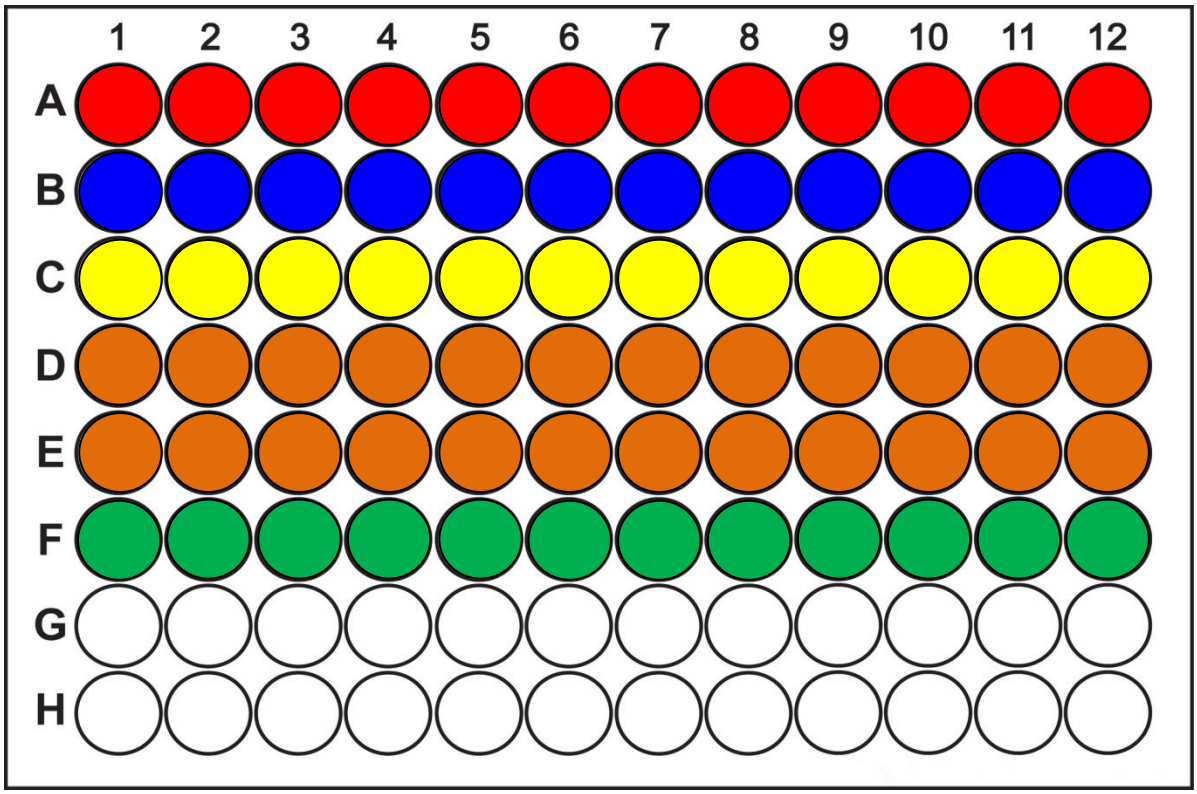
【Additional Information】

1. The lysis-extraction solution is a colorless to pale yellow liquid. It may precipitate after long-term storage at low temperature. If this happens, please warm this solution at 37°C water bath and use it after it turns to a clear solution.
2. When the ambient temperature is below 15°C, the Lysis-extraction solution should be preheated in a water bath at 37°C and used immediately after that.
3. The lysis-extraction solution contains protein denaturing agents, thus it is corrosive. If the solution is accidentally splashed on skin, please wash with plenty of water.
4. The viscosity of the sample is high after lysis of whole blood, sufficient time (recommendation 1-2min) should be given to enrich beads.
5. After the second washing using the washing solution II, try to completely remove the residual liquid before adding the eluent.
6. For any other liquid samples which are not listed above, please refer to the procedure for extracting DNA from blood.
7. The amount of liquid sample used in an experiment is 10-400µl, most preferably 150-200µl.
8. Typically 1-10µg DNA is obtained from 200µl blood sample. The yield may vary depending on different types of blood samples.
9. This kit is also suitable to extract genomic DNA from a large volume of blood samples. The use of reagents should be increased proportionately.

Automation procedure and setup for ABD-0196A

(Throughput: extraction of 8 samples per run)

1. **Setup for pre-packed 96-well standard plates** (sample volume: up to 50 µl)



Row A	Row B	Row C	Row D	Row E	Row F
1、20 µl magnetic beads	200 µl Washing solution I	200 µl Washing solution I	200 µl Washing solution II	200 µl Washing solution II	50 µl Elution solution
2、200 µl Lysis-binding buffer					
3、50 µl sample (to be added by user)					

2. Add 50 µl samples to row A, which are prefilled with magnetic beads and the Lysis-binding buffer.

3. Program setup

a) Install one set of tip combs (12 tip combs per set), select the automation procedure listed in the below table (minor variations are acceptable), and start to extract nucleic acids.

Sequence	Row No.	Function	Mixing time (sec.)	Waiting time (sec.)	Magnetic adsorption time (sec.)	Volume (µl)	Speed	Temp.
1	A	Lysis	1500	0	60	825	Medium	Room Temp.
2	B	Wash I	180	0	60	600		
3	C	Wash I	120	0	60	600		
4	D	Wash II	120	0	60	600		
5	E	Wash II	120	0	60	600		
6	F	Elution	180	2	60	600		
7	E	Move magnet	60	0	60	100		

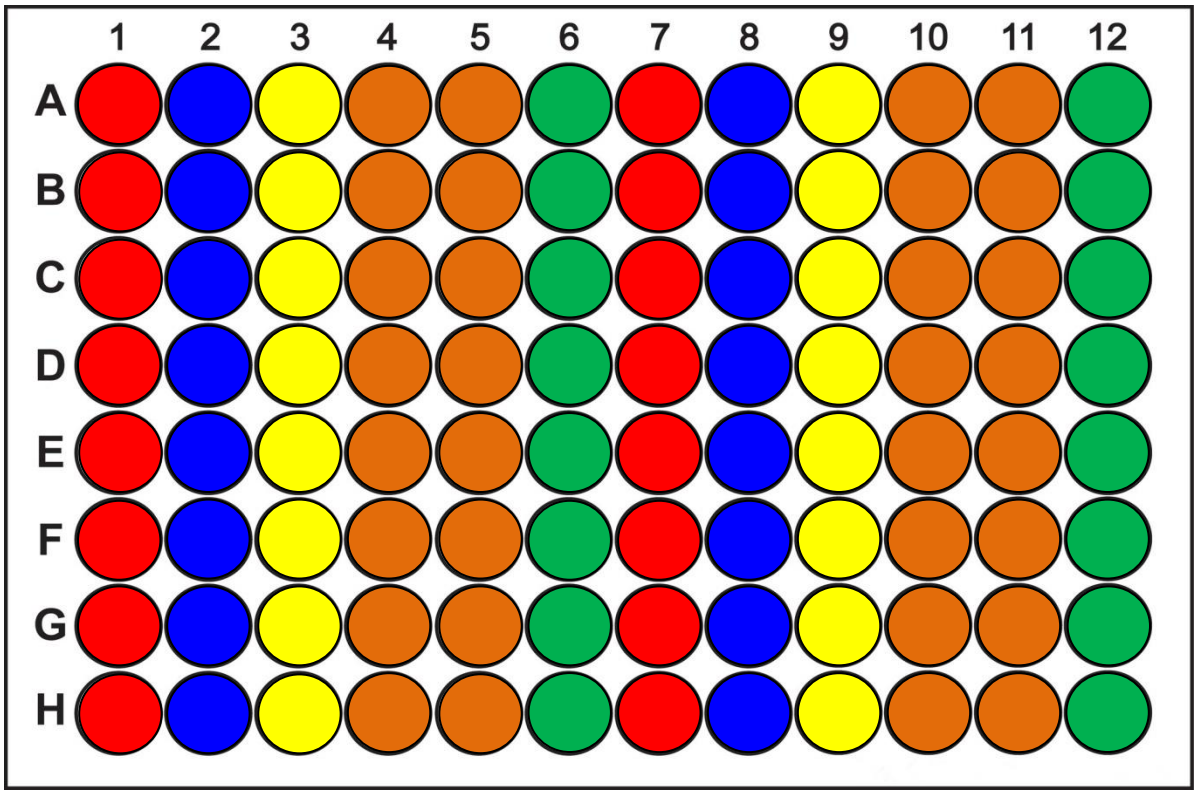
b) The elution solutions containing purified nucleic acids are transferred out from the row F, and used for subsequent studies or storage.

Note: When room temperature is lower than 15 °C, please warm 96-well plates at 37 °C to avoid precipitation of the Lysis-binding buffer and the washing solution I. The solutions are ready to be used after they become clear.

Automation procedure and setup for ABD-0196B

(Throughput: extraction of 16 samples per run)

4. **Setup for pre-packed 96 deep-well plates** (sample volume: up to 200 µl)



Columns 1、7	Columns 2、8	Columns 3、9	Columns 4、10	Columns 5、11	Columns 6、12
1、50 µl magnetic beads	700 µl Washing solution I	700 µl Washing solution I	700 µl Washing solution II	700 µl Washing solution II	100 µl Elution solution
2、700 µl Lysis-binding buffer					
3、200 µl sample (to be added by user)					

5. Add 200 µl samples to columns 1 and 7, which are prefilled with magnetic beads and the Lysis-binding buffer.
6. Program setup

a) Install two sets of tip combs (8 tip combs per set), select the automation procedure listed in the below table (minor variations are acceptable), and start to extract nucleic acids.

Sequence	Column No.	Function	Mixing time (sec.)	Waiting time (sec.)	Magnetic adsorption time (sec.)	Volume (µl)	Speed	Temp.
1	1	Lysis	1500	0	60	825	Medium	Room Temp.
2	2	Wash I	180	0	60	600		
3	3	Wash II	120	0	60	600		
4	4	Wash III	120	0	60	600		
5	5	Wash III	120	0	60	600		
6	6	Elution	180	2	60	600		
7	5	Move magnet	60	0	60	100		

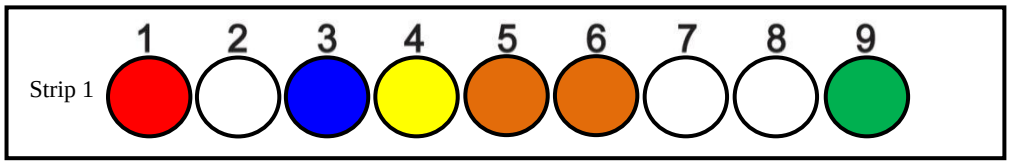
b) The elution solutions containing purified nucleic acids are transferred out from the columns 6 and 12, and used for subsequent studies or storage.

Note: When room temperature is lower than 15 °C, please warm 96-well plates at 37 °C to avoid precipitation of the Lysis-binding buffer and the washing solution I. The solutions are ready to be used after they become clear.

Automation procedure and setup for ABD-0160C

(Throughput: extraction of 1-20 samples per run; Compatible with AvanBio automated magnetic processor)

1. **Setup for pre-packed single strip** (sample volume: 20-1000 µl)



Well 1	Well 3	Well 4	Well 5	Well 6	Well 9
1、50 µl magnetic beads	700 µl Washing solution I	700 µl Washing solution I	700 µl Washing solution II	700 µl Washing solution II	100 µl Elution solution
2、700 µl Lysis-binding buffer					
3、200 µl sample (to be added by user)					

2. Add samples (20-2000 µl, typically 200 µl) to well 1, which are prefilled with magnetic beads and the Lysis-binding buffer.
3. Program setup

a) Install tip combs (10 tip combs per set, a total of two sets per run), select the automation procedure listed in the below table (minor variations are acceptable), and start to extract nucleic acids.

Sequence	Well No.	Function	Mixing time (sec.)	Waiting time (sec.)	Magnetic adsorption time (sec.)	Volume (µl)	Speed	Temp.
1	1	Lysis	1500	0	60	825	Medium	Room Temp.
2	3	Wash I	180	0	60	600		
3	4	Wash I	120	0	60	600		
4	5	Wash II	120	0	60	600		
5	6	Wash II	120	0	60	600		
6	9	Elution	180	2	60	600		
7	6	Move magnet	60	0	60	100		

b) The elution solutions containing purified nucleic acids are transferred out from well 9, and used for subsequent studies or storage.

Note: When room temperature is lower than 15 °C, please warm 96-well plates at 37 °C to avoid precipitation of the Lysis-binding buffer and the washing solution I. The solutions are ready to be used after they become clear.