DNA Clean Beads

Product Description:

The kit uses magnetic bead purification for rapid sorting and recovery of DNA fragment size in high-throughput sequencing library (NGS) construction. The binding buffer of the kit contains superparamagnetic beads, which selectively bind DNA fragments based on the volume ratio of the bead suspension to the sample. High-purity DNA fragments eluted by magnetic separation and ethanol wash, low-salt elution buffer, or nuclease-free water are free of contaminants such as nucleotides, primers, linkers, enzymes, and salts, and can be used directly in downstream applications such as digestion, sequencing, hybridization, PCR, and more. Can be applied to manual or automatic liquid handling equipment.

The product is compatible with various brands of DNA and RNA library preparation kits and the library preparation process reported in the literature, and is exactly the same as the widely used AMPure XP Beads, and the yield and size distribution of the library are highly consistent with AMPure XP Beads, so it can seamlessly replace AMPure XP Beads and effectively reduce your library construction cost.

Experimental manipulation

1. Preparation before the experiment

- Washing solution: 80% ethanol in water.
- Eluent solution: Buffer EB (10 mM Tris-HCl, pH 8.0) or RNase-Free Water.
- Magnetic stand

2. Experiment 1: DNA purification

a. The magnetic beads were taken out from 2 ~ 8°C 30 min in advance and allowed to equilibrate to room temperature.

b. Invert or vortex shaking to mix the magnetic beads thoroughly, pipette a certain volume (depending on the sample, refer to Table 1) and add the beads to the DNA sample, and use a pipette to gently aspirate 10 times to mix thoroughly.

c. Incubate for 10 minutes at room temperature to allow DNA to bind to the beads.

d. Place the sample on a magnetic stand and carefully remove the supernatant after the solution has clarified (approximately 5 minutes).

e. Keeping the sample on the magnet at all times, add 200 μL of freshly prepared Washing solution

rinse the magnetic beads, incubate for 30 sec at room temperature, and carefully remove the supernatant.

f. Repeat step 5 one more time for a total of two rinses.

g. Keep the sample on the magnet at all times and dry the beads with the lid open for approximately 5-10 minutes at room temperature.

h. Remove the sample from the magnetic stand, add an appropriate amount of Eluent solution, vortex or pipette to mix well, and let stand at room temperature for 2 minutes. Let stand on a magnet for 5 minutes until the solution has cleared, and then carefully pipette the supernatant into a new nuclease-free centrifuge tube.

Purified fragment size range	Reference Purified Bead Dosage (Bead Volume Dosage: Sample Volume)
≥1 kb	0.5 X
≥400 bp	1.0 X
≥300 bp	1.2 x
≥200 bp	1.5x
≥100 bp	2.2 x-3.0 x

Table1. DNA purification conditions reference

3. Experiment 2: DNA sorting

a. The magnetic beads were taken out from 2 ~ 8°C 30 min in advance and allowed to equilibrate to room temperature.

b. Invert or vortex shake to fully mix the magnetic bead solution, draw an appropriate volume of magnetic bead solution (first round of sorting, refer to Table 2) and add it to the purified DNA treatment sample according to the sorting conditions of the library preparation kit, and use a pipette to gently aspirate 10 times to mix thoroughly.

c. Incubate for 10 minutes at room temperature to allow DNA to bind to the beads.

d. Place the sample on a magnetic stand, wait for the solution to clear (approximately 5 minutes), and carefully pipette the supernatant into a new nuclease-free centrifuge tube.

e. Add an appropriate amount of magnetic bead solution (second round sorting, refer to Table 2) and mix well with pipette 10 times.

f. Incubate for 10 minutes at room temperature to allow DNA to bind to the beads.

g. Place the sample on a magnetic stand and carefully remove the supernatant after the solution has clarified (approximately 5 minutes).

h. Keeping the sample on the magnet at all times, add 200 μL of freshly prepared Washing solution rinse the magnetic beads, incubate for 30 sec at room temperature, and carefully remove the supernatant.

i. Repeat step 8 once for a total of two rinses.

j. Keep the sample on the magnet at all times and dry the beads with the lid open for approximately 5-10 minutes at room temperature.

k. Remove the sample from the magnetic stand, add an appropriate amount of Eluent solution, vortex, or pipette to mix well, and let stand at room temperature for 2 minutes. Let stand on a magnetic stand for 5 minutes, and once the solution is clear, carefully pipette the supernatant into a new nuclease-free centrifuge tube.

Average length range of sorted fragments (bp)	First volume ratio (DNA Clean beads: DNA)	Second volume ratio (DNA Clean beads: DNA)
170 - 200	1	0.3
220 - 250	0.9	0.2
260 - 280	0.8	0.2
290 - 310	0.8	0.15
310 - 340	0.7	0.2
340 - 360	0.7	0.15
360 - 390	0.7	0.1
390 - 420	0.65	0.1
410 - 440	0.6	0.15
410 - 450	0.6	0.1
530 - 570	0.55	0.1
570 - 600	0.5	0.15
660 - 700	0.45	0.15

Table 2. Reference conditions for DNA fragment sorting

Precautions

1. This product is suitable for a wide range of DNA fragments from 100 bp ~ 50 kb, and the recovery rate is as high as 80%.
2. Remove the DNA Clean Beads from 2~8°C about half an hour in advance and let the temperature equilibrate to room temperature, which can ensure the recovery of DNA. Before use, vortex to shake or invert well to ensure mixing.
3. For 80% ethanol washing, keep the sample tube standing on the magnetic stand and do not agitate the beads. When drying, avoid over-drying the beads. If the beads crack, the beads are over-dried and the DNA will elute less efficiently.
4. When analyzing libraries with the Agilent 2100 Bioanalyzer, there are times when the peak pattern is tailed at a larger molecular weight. This is usually due to trace amounts of magnetic beads remaining in

the purified PCR product. It is recommended to use a magnetically strong magnet for the final step of aspirating the supernatant and try to be careful not to agitate the beads.

5. This product is for scientific use only.

APExBIO Technology
www.apexbt.com
7505 Fannin street, Suite 410, Houston, TX 77054.
Tel: +1-832-696-8203 | Fax: +1-832-641-3177 | Email: info@apexbt.com