FOR RESEARCH USE ONLY!

Magnetic Beads for DNA Purification

07/20

(Catalog # M1502-5, 100 Rxns; Store at 4°C)

I. Introduction:

BioVision's Magnetic Beads for DNA Purification are paramagnetic particles coated with carboxyl groups that can reversibly bind to DNA. The magnetic beads are formulated to specifically bind to DNA and remove unwanted excess primers, adapter dimers, salts and enzymes from a wide variety of reactions. These beads can be used for PCR purification, NGS library prep cleanup and concentrating DNA. An important feature of the magnetic beads is their flexibility due to their ability to size-select the DNA fragments simply by changing the DNA:Beads ratio. **BioVision's Magnetic Beads** allow for high recovery of DNA using a quick and simple procedure.

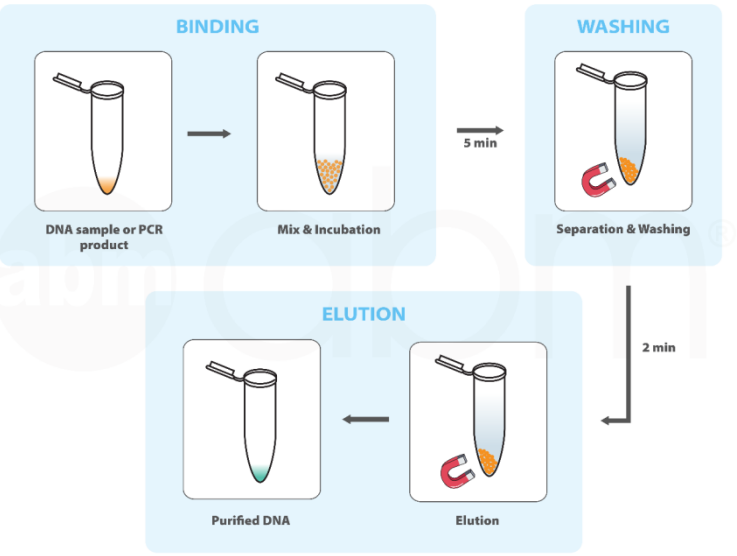

Figure 1. Purification of DNA using Magnetic Beads

II. Applications:

- PCR DNA Purification, NGS library preparation etc.

III. Key Features:

- High recovery
- No centrifugation or filtration required
- Seamlessly integrates into NGS Library Prep workflows
- No salt carryover
- Cost effective

IV. Sample Types:

PCR products, DNA from adapter-ligation and other enzymatic reactions

V. Shipping and Storage Conditions:

The beads are shipped in a gel pack. Tightly seal and store the magnetic beads at 4°C upon arrival. Freezing may reduce the binding efficiency of the beads and result in lower yield. The beads are stable for 1 year when stored at 4°C. Do not freeze the beads.

VI. Appearance:

Beads appear brown and may settle during storage. Vortex and mix thoroughly for at least 30 sec before use. It should appear homogenous and consistent in colour.

VII. User Supplied Reagents and Equipment:

- Freshly prepared 70% ethanol
- Nuclease-free water
- Tris-Acetate (10 mM pH 8.0) or TE Buffer (10 mM Tris-Acetate pH 8.0, 1mM EDTA) for DNA elution
- Magnetic separation rack (for microcentrifuge tubes or 96-well plate format)
- Microcentrifuge tubes

VIII. Protocol for DNA Purification using Magnetic beads:

The protocol given below is a standard protocol for PCR purification using a bead:DNA ratio of 1.8X. This protocol can be adapted for different bead:DNA ratios for size selection (please see Figure 2 below) or different sample volumes. For large sample volumes(eg. >100 µl), we recommend splitting the sample into 2 or more wells in a PCR plate or performing the purification in a 1.5 ml microcentrifuge tube with a suitable magnetic separation rack. Before starting, ensure that the DNA Purification Beads have been warmed up to room temperature (RT) for 30 min, and prepare fresh 70% ethanol for the wash step.

1. Add **1.8 µl DNA Purification Beads** per 1.0 µl of sample (eg. 90 µl beads per 50 µl sample) for a bead:DNA ratio of 1.8X. Pipette the entire volume 10 times to mix thoroughly. Allow the mixed samples to incubate at RT for 3-5 min for optimal binding.
2. Place the reaction plate or microcentrifuge tube onto the **magnetic separation rack** for 5 min to allow for the solution to clear and the beads to collect on the magnet.

3. Keeping the plate or tube on the magnet for the entire wash step, carefully aspirate and **discard the cleared solution**. Avoid disturbing the beads.
4. Dispense 200 µl of **70% ethanol** to the side of the tube or well opposite to where the beads are to avoid disturbing them and incubate for 30 sec at RT. Aspirate and discard all of the ethanol from the well. Repeat for a total of 2 washes.
5. Allow the plate to **air-dry** for 2-5 min to remove residual ethanol. Air-dry the beads until they no longer appear shiny, but before they start to crack. If the beads are not dried enough, residual ethanol may affect downstream reactions. If the beads are overdried, it may be more difficult to elute the DNA from the beads completely.
6. Remove the plate or tube from the magnet and add 15-50 µl of the desired **elution buffer** (nuclease free water, Tris-acetate or TE buffer) to resuspend the beads. Pipette the entire volume 10 times to thoroughly resuspend the beads and ensure there are no clumps. Incubate at RT for 1 min, then place the tube or plate on the magnet for 2-5 min.
7. Once the beads collect on the magnet, carefully transfer the **eluant** to a new tube. If there are beads carried over, place the eluant tube on the magnet to remove the residual beads and transfer the eluant into another new tube.
8. The **purified DNA** is ready for downstream applications or storage at -20° C.

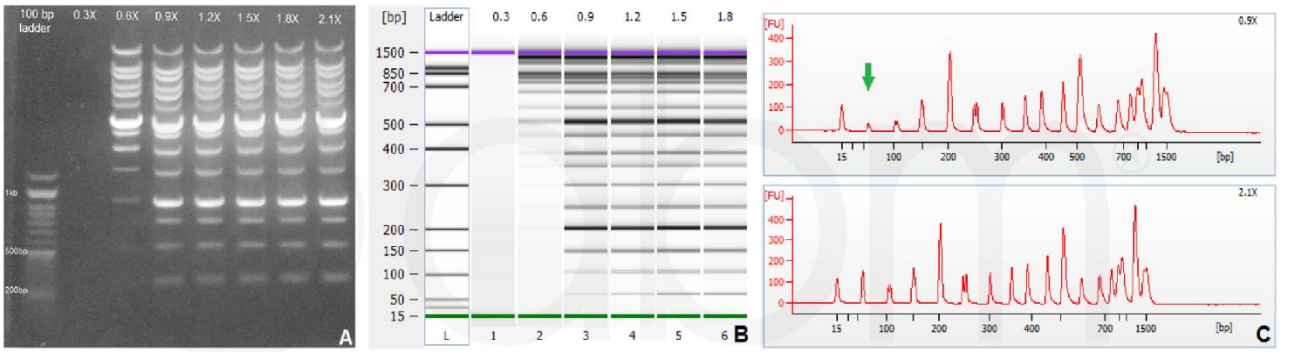

Figure 2. Size selection capability of Magnetic Beads for DNA Purification. Magnetic beads can be used at different ratios of beads:DNA volume to effectively purify DNA from reaction buffer components and enzymes as well as size select for larger or smaller bands. For eg. a ratio of 0.6X beads:DNA volume would remove fragments under 200 bp if the beads-bound fraction was retained, or remove all fragments larger than 200 bp if the unbound fraction was retained (Figures A and B). Figure C shows that a 0.9X ratio is effective at removing primer or adapter dimers of under 100 bp compared to unpurified samples, which is useful for NGS library preparation applications and PCR amplicon purification.

IX. Related Products:

Product Name	Cat. No.	Size
DNA Library Prep Kit for Illumina Sequencing	K1475	12 Rxns
Magnetic Separation Rack	M1501	Reusable
PCR DNA extraction Kit	K1444	100 Preps
Cell & tissue genomic DNA extraction Kit	K1442	100 Preps
Agarose gel DNA extraction kit	K1441	100 Preps
Plasmid DNA extraction kit	K1445	100 Preps
Blood genomic DNA extraction kit	K1443	100 Preps
Gel and PCR DNA Purification Kit	K1455	50 Preps
RobustReady™ PCR Mix	M1130	200, 1000 Rxns
Breeze™ PCR Mix	M1134	200 Rxns
Tissue Advance™ PCR Kit	M1145	100 Preps
FireStart™ PCR Mix	M1141	200 Rxns
Mag-Lentivirus and Retrovirus Purification Kit	K1458	20, 100 Preps
Mag-Adenovirus Purification Kit	K1459	20, 100 Preps

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