MANUAL

NGS DNA Purification MagBeads

Magnetic beads for rapid and simple nucleic acid size selection and purification. Ideal for DNA/RNA library preparation in NGS workflows

Component	Cat#	S5352.0005	S5352.0060
NGS DNA Purification MagBeads Solution		5mL	60mL

Description

Genaxxon's NGS DNA Puri MagBeads are based on proven SPRI (Solid Phase Reverse Immobilization) paramagnetic bead technology and are designed for highly efficient DNA purification and size selection during next-generation sequencing (NGS) library preparation workflows.

The beads are compatible with a broad range of DNA and RNA library preparation kits and can be **seamlessly integrated into existing NGS workflows**. NGS DNA Puri MagBeads provide a **reliable alternative to commonly used magnetic bead** systems such as AMPure XP Beads, enabling users to adopt established clean-up and size-selection protocols without the compromising performance.

The versatile chemistry supports both **manual and automated processing**. NGS DNA Puri MagBeads are fully **compatible with common liquid handling platforms** from leading manufacturers, including Beckman, Hamilton, Tecan, Caliper, PerkinElmer, Agilent, and Eppendorf, facilitating straightforward implementation in high-throughput environments. At the same time, the protocol can be performed manually with equivalent efficiency, providing flexibility for laboratories of all sizes.

Product specifications

Technology:	SPRI paramagnetic bead-based
Purification of PCR products	>100bp
Normal recovery ranges	60%-90% (typically 70%-90%)
Cleanup	1.8X

Advantages

SPRI-based magnetic bead technology for DNA purification and size selection
Compatible with most DNA and RNA NGS library preparation workflows
Direct replacement for AMPure XP Beads without protocol modifications
Suitable for **both automated and manual processing**
Compatible with **common liquid handling platforms**
Reliable DNA recovery and **reproducible size selection**

Shipment: not cooled

Long-Term Storage: Store at +2°C to +8°C.

Shelf-life: Stable until expiration date when stored and handled correctly

Important notes before getting started

- The protocol serves as a guideline. In case of any questions, please contact Genaxxon: **info@genaxxon.com**
- To ensure high efficiency of DNA recovery, please remove the MagBeads from the fridge about 30 min in advance and balance to room temperature.
- To ensure uniform mixing, please vortex reagent before use.
- When washing the sample with 80% ethanol, keep the sample tube on the magnetic frame and do not disturb the magnetic beads. Drying time may vary to ensure all traces of ethanol are removed. Avoid over drying the bead ring (bead ring appears cracked if over dried) as it will significantly decrease elution efficiency.
- When using Agilent 2100 Bioanalyzer to analyze samples, there may be tailing at higher molecular weight ranges, which is typically caused by the residue of trace magnetic beads. A magnetic frame with strong magnets and avoiding disturbing the beads at the final step can decrease

Experimental Process

Required additional material (not supplied)

- 80% ethanol
- Nculease-free water (Cat# M6340)
- PCR tubes
- Magnetic frame
- Filtertips
- Microcentrifuge
- Vortex mixer
- Agilent Bioanalyzer or comparable method to assess the DNA library quality

1. DNA Purification

1.1 Allow the magnetic bead solution to equilibrate to room temperature for 30 minutes.

1.2 Vortex to fully resuspend the magnetic bead solution. According to Table 1, transfer the indicated amount of bead mixture to the DNA sample in a microcentrifuge tube and gently mix with a pipette.

Table 1: Reference conditions for DNA purification

Fragment size range after purification (bp)	Reference purified magnetic bead dosage (magnetic bead volume dosage : sample volume)
≥ 1kb	0.5 X
≥ 400bp	0.8 X
≥ 300bp	1.0 X
≥ 200bp	1.5 X
≥ 100bp	2.2 X

1.3 Incubate at room temperature for 5 min to bind DNA to magnetic beads.

1.4 Place the tube on a magnetic stand and carefully remove the supernatant after the solution is clarified (about 5 min).

NOTE: DO NOT remove all of the supernatant to avoid disturbing the beads, which may affect performance. Leave approx. 2µL of liquid at the bottom of the tube.

1.5 With the tube still on the magnetic stand, rinse the magnetic beads with 200µL freshly prepared 80% ethanol. Incubate at room temperature for 30 sec to clarify and carefully remove the supernatant.

1.6 Repeat the previous step once for a total of two ethanol rinses.

1.7 With the tube still on the magnetic stand, open the microtube lid and air-dry the magnetic beads at room temperature for about 2 - 3 min.

1.8 Remove the tube from the magnetic stand, add an appropriate amount of Nuclease-free water (>20µL, e.g. cat# M6340), gently mix with a pipette, and let stand at room temperature for 2 min..

1.9 Return the reaction tube to the magnetic stand for 1 min to
separate beads from the solution. Transfer supernatant to a new nuclease free centrifuge tube after sample is transparent.

2. DNA classification selection

2.1 Allow the magnetic bead solution to equilibrate to room temperature for 30 minutes.
2.2 Vortex to fully resuspend the magnetic beads. According to the sorting conditions of the library preparation kit (see Table 2) pipette appropriate volume of magnetic bead liquid (Table 2, 1st volume ratio) and add it to the purified DNA sample and gently mix with the pipette.

2.3 Incubate at room temperature for 5 min to bind DNA to magnetic beads.

2.4 Place the sample on a magnetic stand until the solution is clarified (about 5 min). Carefully remove the supernatant and transfer to a new nuclease free centrifuge tube for secondary sorting. (The supernatant should be retained).

NOTE: DO NOT remove all of the supernatant to avoid disturbing the beads, which may affect performance. Leave approx. 2µL of liquid at the bottom of the tube.

2.5 With a pipette, add the indicated amount of magnetic bead liquid (Table 2, 2nd volume radio) and mix thoroughly by pipetting.

2.6 Incubate at room temperature for 5 min to bind DNA to magnetic beads.

2.7 Place the sample on a magnetic stand and carefully remove the supernatant after the solution is clarified (about 5 min).

2.8 With the sample on the magnetic stand, add 200µL of freshly prepared 80% ethanol to rinse the beads, incubate at room temperature for 30 sec, and carefully remove the supernatant.
2.9 Repeat the previous step once and rinse twice in total.

2.10 With the tube on the magnetic stand, open the microtube lid and air-dry the magnetic beads at room temperature for about 4-5 min.

NOTE: DO NOT over-dry the beads. Excessive drying will negatively affect purification performance.

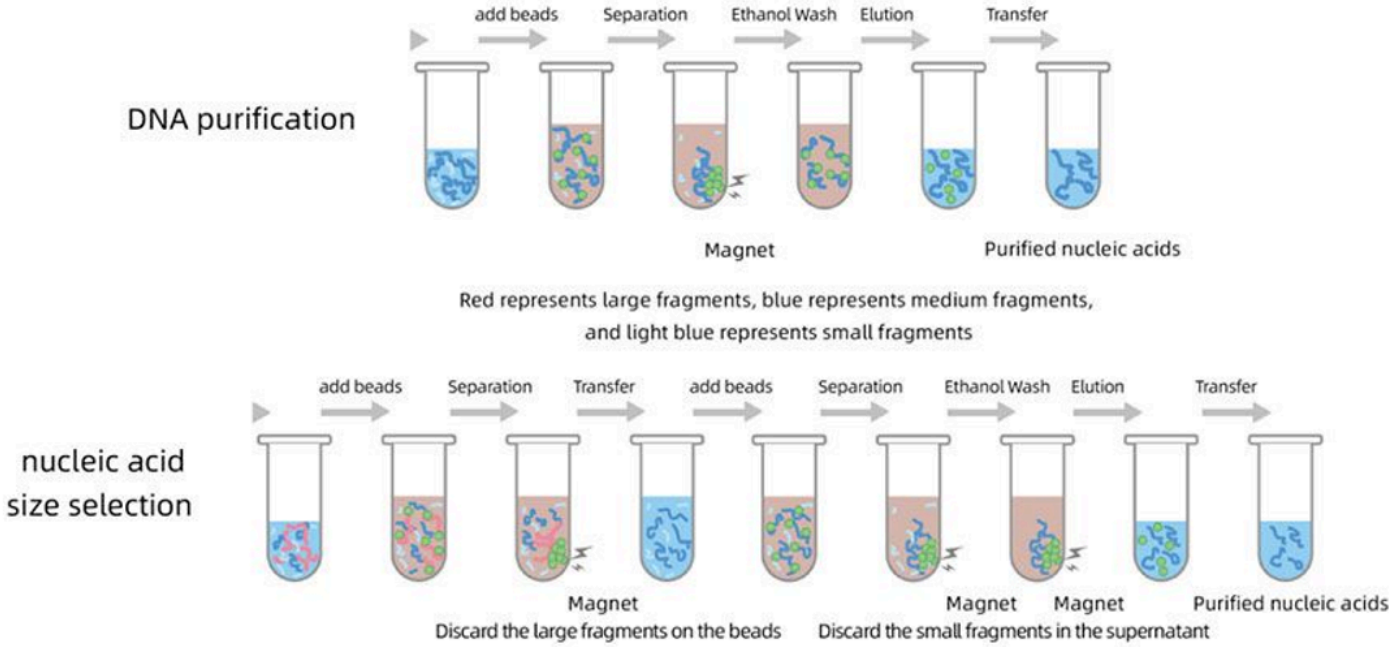
2.11 Remove the tube from the magnetic stand, add an appropriate amount of Nuclease-free water (>20µL, e.g. cat# M6340), and mix with a pipettor or vortex mixer. Let stand at room temperature for 4-5 min, and then place the reaction tube on the magnetic frame for 1 min.

2.12 Transfer the supernatant to a new nuclease free centrifuge tube after sample is transparent.
This completes the size selection process.

Table 2: Recommended condition for DNA fragment sorting

Average length range of sorted fragments (bp)	250-350bp	350-450bp	450-550bp	550-700bp	700-900bp	900-1000bp
1st volume ratio (Beads : DNA)	0.8 X	0.7 X	0.6 X	0.55 X	0.5 X	0.45 X
2nd volume ratio (Beads : DNA)	0.2 X	0.2 X	0.2 X	0.15 X	0.15 X	0.15 X

Workflow chart of either DNA purification or nucleic acid size selection using Genaxxon's NGS DNA purification MagBeads



Additional information

Quality Control

Genaxxon bioscience NGS DNA Purification MagBeads undergo stringent quality controls and functional testing to ensure optimal stability and repeatability.

Safety information

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate material safety data sheets (MSDSs). These are available online as pdf-file or on request (info@genaxxon.com).

Product Use Limitations

NGS DNA Purification MagBeads is developed, designed, and sold for research purposes only. It is not to be used for human, diagnostic or drug purposes or to be administered to humans unless expressly cleared for that purpose by the Food and Drug Administration in the USA or the appropriate regulatory authorities in the country of use. All due care and attention should be exercised in the handling of many of the materials described in this manual.

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