miniaturised magnetic bead clean-ups on mosquito® HV genomics

- **new magnetic bead separation block and protocol optimized for bead clean-ups with mosquito® HV genomics**
- **miniaturize NGS library preparation workflows with significant cost savings**

An essential accessory for every NGS lab, the magnetic bead separation block has been optimized for miniaturized SPRI bead clean-ups with mosquito HV genomics. The block and the corresponding mosquito protocol provide a semi-automated process that combines significant cost savings with high recovery rates.

The new bead clean-up process will be helpful in single cell and bulk library preparation workflows, including the latest on-bead tagmentation methods.

The improved magnetic bead clean-up process is compatible with all mosquito Genomics models. The block fits also **dragonfly® discovery**. It delivers high DNA recovery rates and reliable clean-up or size selection in 384-well PCR plates (Table 2 and Fig.2). Bead cleanups have been optimized to volumes as low as 5 µL.

validated with:

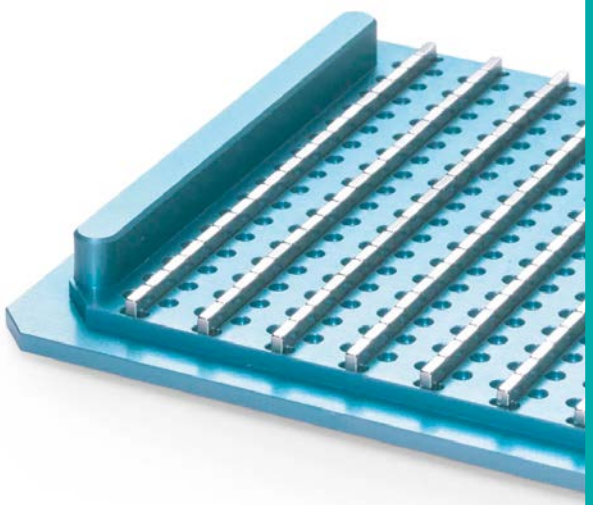
- **AMPure XP beads** (Beckman Coulter)
- **SPRIselect beads** (Beckman Coulter)
- **Illumina DNA Prep** (previously known as Nextera DNA Flex)

technical specification

Tested plates:
Eppendorf twin.tec 384-well PCR plate
Bio-Rad Hard-Shell 384-well PCR plate

Table 1:
Recommended volumes for miniaturized bead clean-up process performed with SPT Labtech magnetic bead separation block.

Sample volume	Bead volume	EtOH volume	Elution volume
2-10 µL	2-10 µL	4.5-10 µL	2-20 µL



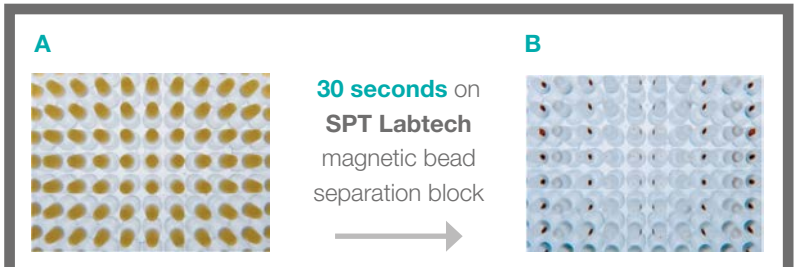


Fig. 1: Separation of magnetic beads in a 384-well PCR plate. 5 µL of SPRIselect beads were added to 5 µL of sample and mixed thoroughly before placing on the magnetic bead separation block (SPT Labtech).

A: Immediately after resuspension.

B: 30 seconds after the separation process.

sptlabtech

Purification 0.5x	Full volume manual	Miniaturized manual	Miniaturized mosquito HV
Recovery (%)	67 +/- 1.0	62 +/- 0.7	69 +/- 0.8
Clean-up rate (%)	100	100	100

Purification 0.8x	Full volume manual	Miniaturized manual	Miniaturized mosquito HV
Recovery (%)	72 +/- 0.3	70 +/- 0.8	76 +/- 0.3
Clean-up rate (%)	100	100	100

Size selection	Full volume manual	Miniaturized manual	Miniaturized mosquito HV
Recovery (%)	50 +/- 0.3	45 +/- 0.5	61 +/- 0.9
Clean-up rate (%)	100	100	100

Table 2: Control DNA (Mid Range DNA Ladder, Jena Bioscience # M-203, 2.6 ng/µl) was treated with SPRIselect beads according to the manufacturer's Purification or Size Selection protocols (Beckman Coulter). Bead ratios (-fold volume of bead suspension vs. initial sample volume) used: Purification 0.5x or 0.8x, respectively; Size Selection: first step 0.95x; second step 0.85x. Samples were analysed on a Fragment Analyzer with HS NGS Fragment Kit (Advanced Analytical Technologies).

Full-volume manual: 50 µl of control DNA in 500 µl PCR-grade microtubes.
Miniaturized manual: 5 µl of control DNA in Eppendorf twin.tec 384-well PCR plate with magnetic bead separation block (SPT Labtech).
Miniaturized, automated: as in miniaturised manual process but all pipetting steps carried out on mosquito HV genomics.

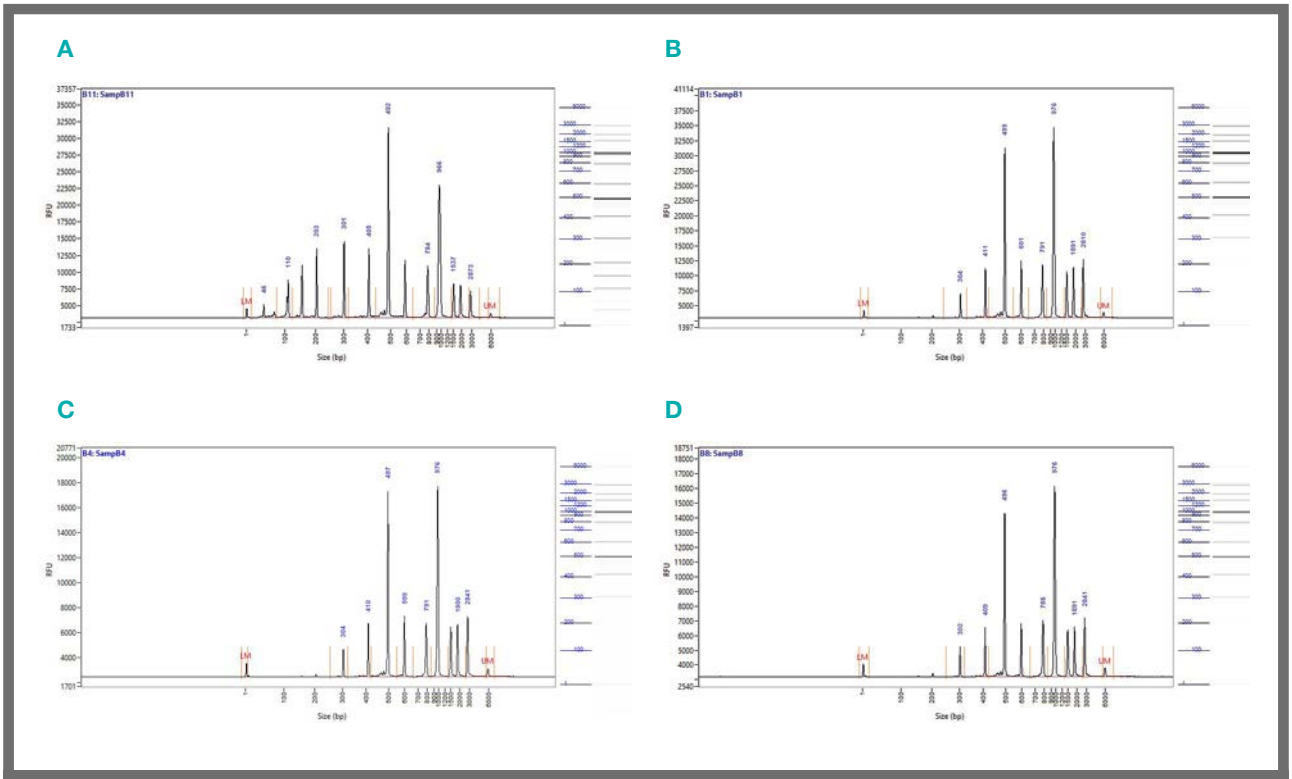


Fig. 2: Control DNA (Mid Range DNA Ladder, Jena Bioscience # M-203, 2.6 ng/µl) was treated according to the SPRIselect purification protocol with a 0.8x volume of bead suspension. Samples were analysed on a Fragment Analyzer using the HS NGS Fragment Kit. Representative results are shown.

A: Input control (before clean-up)

B: Full-volume manual purification with 50 µl of control DNA in 500 µl PCR-grade microtubes.

C: Miniaturized manual purification with 5 µl of control DNA in Eppendorf twin.tec 384-well plate with magnetic bead separation block.

D: Miniaturized, automated purification: as in C but all pipetting steps carried out on mosquito HV genomics.

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