

Magnetic beads are widely used in molecular biology because of their capacity to specifically and quantitatively bind nucleic acids, their straightforward handling and their unlimited scalability. PSS has developed the unique Magtration (magnetic filtration) technology to optimally separate magnetic beads in a fully automated workflow. Plastic expandable bellows tips minimize exposure to potentially infectious material.

The magLEAD 5bL instrument provides:

- Sealed bellows tips to reduce infection risk
- A starting volume of 5 mL
- Flexible loading of 1-5 samples
- Fast extraction of nucleic acids: less than 1.5 h per run
- Pre-filled consumables to minimize errors

magLEAD 5bL



Unique Magtration Technology

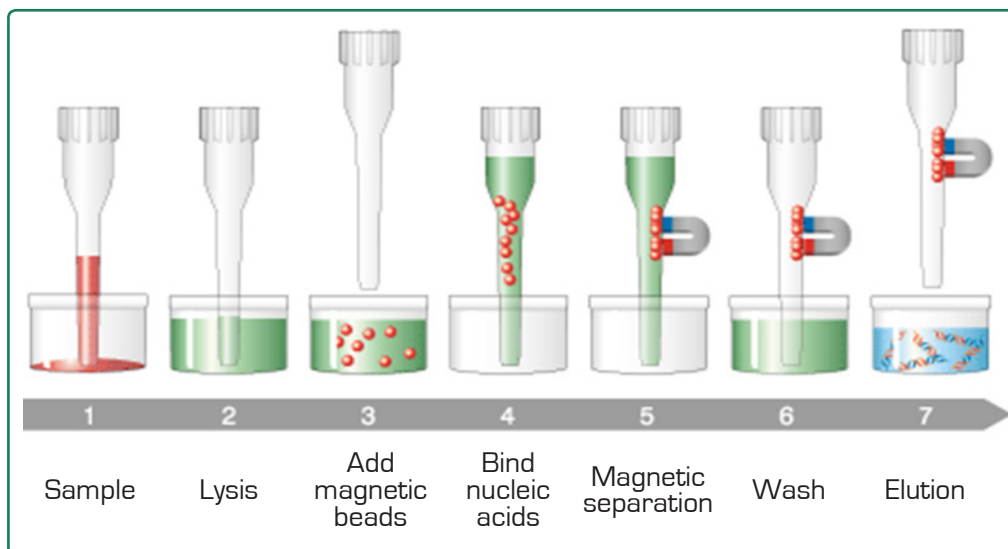


Fig. 1: Schematic view of the separation steps in Magtration technology.

Inside the magLEAD 5bL instrument, samples are first lysed by protease digest in the presence of chaotropic agents [1,2]. Addition of alcohol allows binding to the magnetic beads [3,4]. The unique Magtration technology ensures efficient separation of magnetic beads, which are immobilized on the side of the pipet tips, while lysis and wash buffers are removed [5,6]. In the elution step, nucleic acids are released from the magnetic beads and transferred to a fresh tube. All steps are performed in a single, sealed bellows tip per sample, minimizing cross-contamination and exposure to potentially infectious material. The bellows tip seal serves as a single-use piercing unit for the reagent cartridge. After the run, piercing unit, used tips and waste are safely disposed. This unique procedure ensures purification of high-quality nucleic acids.

MagDEA Dx LV kit and bellows tips

MagDEA Dx LV is a nucleic acid extraction reagent developed for use with the magLEAD 5bL instrument. Pre-filled reagent cartridges and dedicated plastic consumables enable instrument setup with less than 10 minutes hands-on time.

The optimized protocol uses magnetic bead-based chemistry to rapidly extract and purify high quality nucleic acids with excellent reproducibility. No additional reagents are required. Each cartridge is labeled with a 2D barcode for reagent tracking. The unique bellows tips are completely sealed to prevent contamination when potentially infectious samples are processed.



Fig. 2: Back: MagDEA Dx LV cartridges for nucleic acid purification on the magLEAD 5bL. Front: Bellows tips with single-use piercing unit.

magLEAD 5bL Specifications

Number of samples per run	1-5
Sample volume	5 mL
Elution volume	1 mL
Process time	< 1.5 hours
Sample matrices	Human whole blood (Under evaluation: serum, plasma, liquid biopsy samples, CSF, swabs)
Purified nucleic acids	genomic DNA (Under evaluation: circulating DNA, bacterial/viral DNA and RNA)
Extraction chemistry	magnetic bead-based
Consumables	MagDEA Dx LV cartridges, bellows tips
Barcode information	2D barcode on each reagent cartridge
Reagent storage conditions	Ambient temperature
Instrument functions	Internal UV lamp, SD card slot Optional: external bar code reader
Instrument dimensions	H660 × W450 × D670 mm
Instrument weight	approx. 40 kg