MAGBIO

Liquid Biopsy Research - “We are where you start”

MagQuant™ Plus DNA Kit

Catalog Nos. MQP-50016,MQP-50096, MQP-50384
Manual Revision v1.0

DNA and Library Normalization Kit

- Magnetic beads based chemistry
- No centrifugation or filtration

PROTOCOL

Contents

For Research Use Only. Not for use in diagnostic procedures.

Information in this document is subject to change without notice.

Product Description

The MagQuant™ Plus DNA normalization system is based on paramagnetic beads technology designed to standardize DNA amount without the need for fluorescence measurement or other adjustment to obtain the desired uniform amount of DNA from samples of various sources; therefore saving time, and operation cost. The MagQuant™ Plus DNA normalization system is based on binding of DNA to proprietary beads with limited binding capacity; and excess DNA are washed off, and normalized amounts of DNA are eluted. The protocol requires no centrifugation and can be used in manual procedure or as well as guideline for adapting the kit to automatic liquid handling instruments.

Benefits

- Streamlining sample preparation processes: No centrifugation or filtration.
- Reduce hands-on time which minimizes errors for an easier, faster, and more accurate sequencing study
- Reduce overall cost

Applications:

- PCR
- Cloning
- Genotyping
- Target Enrichment
- Library Construction
- Next generation sequencing

Process

MagQuant™ Plus DNA kit uses a simple 3 steps procedure: (Bind-Wash-Elute) that allows to obtain equal DNA amounts regardless of the DNA input. Thus similar-sized PCR DNA fragments, purified plasmid DNA, purified genomic DNA, as well as DNA from PCR reactions (unpurified), and plasmid lysate can be normalized in various downstream applications such as PCR reactions, library preparation and subsequent sequencing (i.e. next generation sequencing).

Kit Content and Storage

MagQuant Plus DNA Kit Catalog No.	MQP-50016	MQP-50096	MQP-50384	STORAGE
Number of Preps	16	96	384	
SWB Buffer	4 mL	20 mL	80 mL	15-25°C
NB Buffer	7 mL	35 mL	150 mL	15-25°C
MB Elution Buffer	4 mL	20 mL	70 mL	15-25°C
MB Wash Buffer	2.5 mL	12 mL	40 mL	15-25°C
MAG-L1 Particles	190 µL	1.1 mL	4.4 mL	2-8°C

Stability

All components are stable for 12 months when stored accordingly.

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). MSDS can be downloaded from the "Product Resource" tab when viewing the product kit.

Preparation of Reagents

Prepare the following components for each kit before use:

Catalog No.	Component	Add 100% Ethanol	Storage
MQP-50016	MB Wash Buffer	4.5 mL	Room Temp 15-25°C
Components are stable for 1 year when stored closed at room temperature			

Catalog No.	Component	Add 100% Ethanol	Storage
MQP-50096	MB Wash Buffer	28 mL	Room Temp 15-25°C
Components are stable for 1 year when stored closed at room temperature			

Catalog No.	Component	Add 100% Ethanol	Storage
MQP-50384	MB Wash Buffer	90 mL	Room Temp 15-25°C
Components are stable for 1 year when stored closed at room temperature			

Read before using this kit

Specifications and Recommendations:

Genomics DNA (gDNA**) Normalization:

** Source of gDNA: This method is optimized for gDNA from Whole Blood and Bacteria.

Expected Recovery:
The binding capacity of the bead varies with the size and source of DNA, in other words the amount of DNA that will bind to the beads depends on the size of the DNA, the input and method used for purification.
The recommended DNA input amount must be 2000 ng or greater. Adding less DNA than the recommended input amount will cause more variation in the normalized product.
For best results use a magnetic bead based gDNA isolation method or salt out based method as less gDNA shearing is associated with magnetic beads-based method as opposed to silica spin column method which induces more DNA shearing and more variation in the normalized output DNA. To change your output DNA concentration, adjust the elution volume used.

Expected variation: Normalized DNA Output concentrations +/-10%

Amplicons Library Normalization:

Expected Recovery:
The size of the DNA, the amount of input and method used for purification determines the amount of DNA that will bind to the beads. The recommended DNA input amount must be 500 ng or greater. It is highly recommended to users to establish method based on each DNA fragment size of interest to expect less variability in the desired DNA ouput. Generally 200bp-600bp DNA fragments show similar response.

Adding less DNA than the recommended input amount will cause more variation in the normalized Product. To change your output DNA concentration, adjust the elution volume used. Do not adjust the volume of Mag-L1 Particles added to the reaction as it will increase variation.

Expected variation: Normalized DNA Output concentrations +/-10%

MagQuant™ Plus DNA Protocol

For unpurified and purified DNA sample

(PCR reaction and plasmid lysate or purified gDNA, PCR DNA and Plasmid DNA)

Equipment and Reagents to Be Supplied by User:

- 100% Ethanol
- Magnetic separation device for 1.5 mL format or 96 plate format:
  For 1.5 mL tube format: MagBio Genomics Cat# MBMS-10
  For 96 plate format: MagBio Genomics Cat# MYMAG-96
- 1.5 mL tubes or 96-well cycling plate

Protocol

Prepare MB Wash Buffer according to Preparing Reagents section on Page 2.
IMPORTANT: Protocol must be followed exactly. Do not change volumes used for input amount, amount of Mag-L1 Particles or other conditions. To vary DNA output concentration amount of elution buffer used can be varied.

1. **Transfer up to 50 µL DNA to be normalized to a 96-well PCR plate (≥260 µL volume; not provided).**
   Note: If the reaction volume is less than 50 µL, add Elution Buffer to bring the volume up to 50 µL. Do not change the reaction size.

2. **For Library Normalization:**
   Add 200 µL NB Buffer and 10 µL Mag-L1 Particles. Vortex or pipet up and down to mix thoroughly.

   ### OR

   For gDNA Normalization:
   Add 50 µL SWB Buffer and 10 µL Mag-L1 Particles. Vortex or pipet up and down to mix thoroughly.

3. **Let sit at room temperature for 10 minutes.**

4. **Place the plate on the Magnetic Separation Device to magnetize the Mag-L1 Particles. Let sit at room temperature until the Mag-L1 Particles are completely cleared from solution.**

5. **Remove and discard the supernatant.**
   ⚠ Do not disturb the attracted beads while discarding the supernatant.

6. **Remove the plate from the Magnetic Separation Device.**

7. **For Library Normalization:**
   Add 100 µL NB Buffer. Vortex or pipet up and down to mix thoroughly.

OR

For gDNA Normalization:
Add 100 µL SWB Buffer. Vortex or pipet up and down to mix thoroughly.

8. **Place the plate on the Magnetic Separation Device to magnetize the Mag-L1 Particles. Let sit at room temperature until the Mag-N1 Particles are completely cleared from solution.**

9. **Remove and discard the supernatant.**

   ⚠ Do not disturb the attracted beads while discarding the supernatant.

10. **Add 150 µL MB Wash Buffer. Do not remove plate from the Magnetic Separation Device. Note: MB Wash Buffer must be diluted with 100% ethanol prior to use. Please see Page 4 for instructions.**

11. **Let sit at room temperature for 1 minute.**

12. **Remove and discard the supernatant.**

    ⚠ Do not disturb the attracted beads while discarding the supernatant.

13. **Repeat Steps 10-12 for a second MB Wash Buffer rinse step.**

14. **Leave the plate on the Magnetic Separation Device for 5-10 minutes to air dry the Mag-L1 Particles. Remove any residual liquid with a pipettor.**

    ⚠ It is critical to completely remove all traces of alcohol but take caution in not over drying the beads as this will reduce the yield.

15. **Remove the plate from the Magnetic Separation Device.**

16. **Add 25-100 µL MB Elution Buffer. Vortex or pipet up and down to mix thoroughly.**

17. **Let sit at room temperature for 5 minutes.**

18. **Place the plate on the Magnetic Separation Device to magnetize the Mag-L1 Particles. Let sit at room temperature until the Mag-L1 Particles are completely cleared from solution.**

19. **Transfer the supernatant containing the normalized DNA to a new plate.**

20. **Store the DNA at -20°C.**

Ordering and Related Product Information

Post PCR and Next Gen library prep clean up system

Catalog No.	Product
AC-60005	HighPrep PCR (5 mL)
AC-60050	HighPrep PCR (50 mL)
AC-60500	HighPrep PCR (500 mL)

BigDye Sanger Sequencing Cleanup

Catalog No.	Product
DT-70005	HighPrep DTR (5 mL)
DT-70050	HighPrep DTR (50 mL)
DT-70500	HighPrep DTR (500 mL)

Magnetic Separation Devices

Catalog No.	Description
MYMAG-96	Handheld Magnetic Separation Device (96 well microplate format)
MBMS-10	MagStip magnetic stand (1.5 mL x 10)
MBMS-31550	15ml and 50ml magnetic stand combo. (3x15ml and 3x50ml)

cfDNA Purification Kit

Catalog No.	Product	Description	Preps
CFK-D10-400UL	CF-Kapture 21 Kit (200-400µl) 10 preps	Purification of cell-free DNA (cfDNA) from 200-400 µl STABILIZED plasma	10
CFK-D5-5ML	CF-Kapture 21 Kit (3-5ml) 5 preps	Purification of cell-free DNA (cfDNA) from 3-5 ml STABILIZED plasma	5
CFK-D50-400UL	CF-Kapture 21 Kit (200-400µl)(50 preps)	Purification of cell-free DNA (cfDNA) from 200-400 µl STABILIZED plasma	50
CFK-D50-2ML	CF-Kapture 21 Kit (1-2ml) 50 preps	Purification of cell-free DNA (cfDNA) from 1-2 ml STABILIZED plasma	50
CFK-D50-5ML	CF-Kapture 21 Kit (3-5 ml) 50 preps	Purification of cell-free DNA (cfDNA) from 3-5 ml STABILIZED plasma	50

Whole blood stabilization tubes

Catalog No.	Product	Description
BS21-CF10-100	Blood STASIS 21-ccfDNA 9 mL (100)	100 tubes: 2 ml Additive, 7 ml blood draw volume
BS21-CF6-100	Blood STASIS 21-ccfDNA 6 mL (100)	100 tubes: 1.5 ml Additive, 4.5 ml blood draw volume
BS21-CF3-200	Blood STASIS 21-ccfDNA 3 mL (200)	200 tubes: 0.5 ml Additive, 2.5 ml blood draw volume

RNA or cDNA for in vitro applications clean up system

Catalog No.	Product
RC-60005	HighPrep RNA Elite (5 mL)
RC-60050	HighPrep RNA Elite (50 mL)
RC-60500	HighPrep RNA Elite (500 mL)

Liquid Biopsy Research - “We are where you start”

www.magbiogenomics.com