

*Kit 701*

*the 1st Fully Automated Kit  
for NGS Clean Up and Size  
Selection*



## Introduction

*Next-generation sequencing (NGS) is one of the powerful downstream applications of DNA/RNA extraction.*

*It is an extremely sensitive technology requiring precision in selection of DNA fragments of desired length. NGS clean up and size selection kits are essential to NGS labs, but with rise of demand and development of new applications the need for automation keeps rising.*

*Manual NGS clean up and size selection kits are not new to the market, but the price point combined with time consuming and complicated process along with high chance for human error or contamination make them not an ideal choice. After years of development MagCore present the first completely automated NGS clean up and size selection kit.*

*MAGCore® kit 701 follows the familiar format and has all the reagents pre-sealed and all components packed. Clean up and size selection procedure is virtually the same and NA extraction with MagCore Systems:*



*The performance was tested and validated in comparison with other commercially available brands and showed that the cleanup program results in 80% or higher recovery while removing all adapter dimers in sample which is then applicable during the preparation of Next Generation Sequencing (NGS) library. For DNA fragment size selection, the program selectively purifies nucleic acid fragments from 100-200 bp or from 200-500 bp in just minutes which is also suitable for library preparation. The entire purification procedure is fully automated and can be performed in 35 minutes.*

## Test design

**To test Kit efficacy, we performed few experiments designed to show the effectiveness of the DNA clean up: code 701A; and quality of the DNA obtained after running size selection protocols: code 701B DNA Size Selection 200-500bp and code 701C DNA Size Selection 100-200bp. We also run comparison study to present the result obtained from MagCore kit 701 and competitors' column kits.**

### NGS DNA Library Prep – DNA Cleanup & Size Select (Agilent 2100 Analysis)

Human genomic library prepared with DNA Library Prep Kit and analyzed by an Agilent Technologies 2100 Bioanalyzer

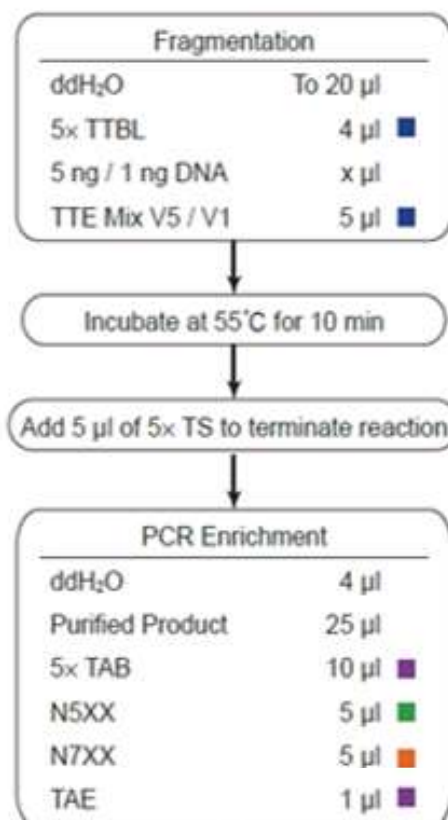
Goal: Test MagCore® NGS Clean-up kit performance

Materials:

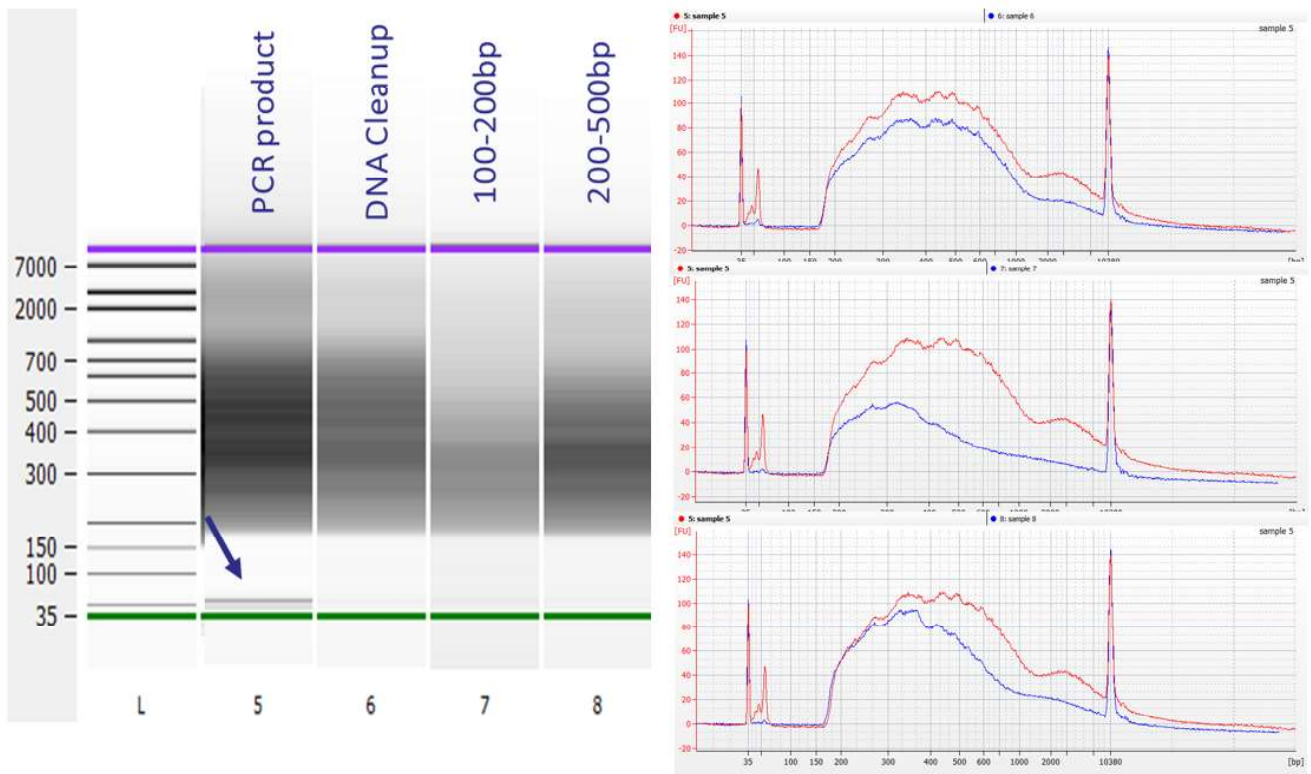
1. TruePrep DNA Library Prep Kit V2 for Illumina® (TD503)
2. TruePrep Index Kit V2 for Illumina® (TD202)
3. MagCore 701 Cartridge (NGS-Cleanup Kit)
4. High Sensitivity DNA Chip Electropherogram (Agilent 2100 Bioanalyzer)

Method:

5. Prepare DNA Library (a reaction produces 50ul DNA Library) \*DNA Sample using
6. The DNA Control provided by TruePrep DNA Library Prep (TD503)
7. Use DNA Library for DNA Cleanup or DNA Size Select\*
  - (1) MagCore DNA Cleanup
  - (2) MagCore DNA Size Select 100-200bp
  - (3) MagCore DNA Size Select 200-500bp
8. Use Agilent-High Sensitivity DNA Chip Electropherogram to analyze DNA Library
9. Perform DNA Cleanup or DNA Size Select.



## NGS DNA Library Prep – DNA Cleanup & Size Select (Agilent 2100 Analysis)



Results obtained demonstrate that MagCore® NGS Clean-up kit can remove adapter.



**DNA Cleanup– Different Beads**

*MagCore beads performance was compared to the commercially available brands and showed higher results*

No.	Sample	Method	before Conc.(ng/ul)	After <u>clean up</u> Conc.(ng/ul)	260/280	260/230	Recovery (%)
1	S2BV (200bp)	MagCore 7014	52.35 ng/ul 260/280: 1.99 260/230: 2.25	46.41	2.11	1.56	88.65
2		AMPure XP		40.47	2.06	2.37	77.30
3		Vazyme VAHTS DNA Clean Beads		40.14	2.02	2.29	76.67
4	16s rRNA (466bp)	MagCore 7014	51.24 ng/ul 260/280: 2.02 260/230: 2.50	45.23	2.10	1.70	88.27
5		AMPure XP		41.83	2.10	2.33	81.64
6		Vazyme VAHTS DNA Clean Beads		46.12	2.13	2.30	90.01
7	757bp	MagCore 7014	49.28 ng/ul 260/280: 1.94 260/230: 2.14	43.66	2.09	1.61	88.59
8		AMPure XP		40.07	1.94	2.58	81.31
9		Vazyme VAHTS DNA Clean Beads		43.10	2.04	2.50	87.46

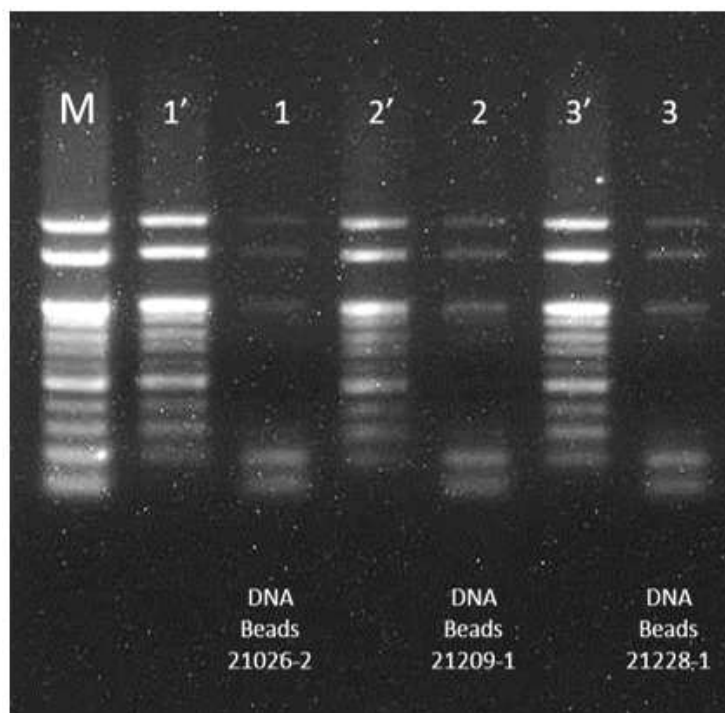
*MagCore DNA beads: Lot 21026-2*

*AMPure XP Beads (Sample 50ul, Elute 50ul)*

*Vazyme VAHTS DNA Clean Beads (Sample 50ul, Elute 50ul)*

## Size Selection – Different Beads Lot

Magnetic Beads: MagCore DNA beads from different batches were tested and the test results are consistent and repeatable



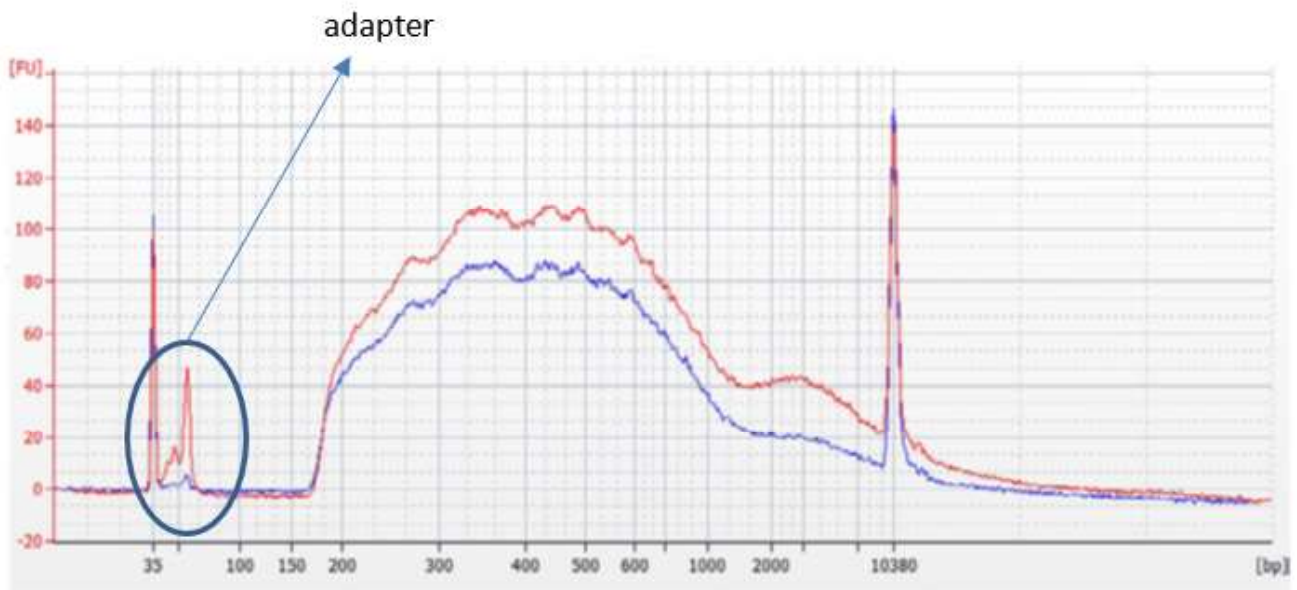
No.	Method	Sample	Batch	DNA cutoff (bp)
1	Size Select	100bp Marker	21026-2	100-200bp
2			21209-1	100-200bp
3			21228-1	100-200bp

## Performance

### DNA clean up

Human genomic library prepared with DNA Library Prep Kit was analyzed by an Agilent Technologies 2100 Bioanalyzer.

MagCore® NGS Clean-up kit can remove adapter.

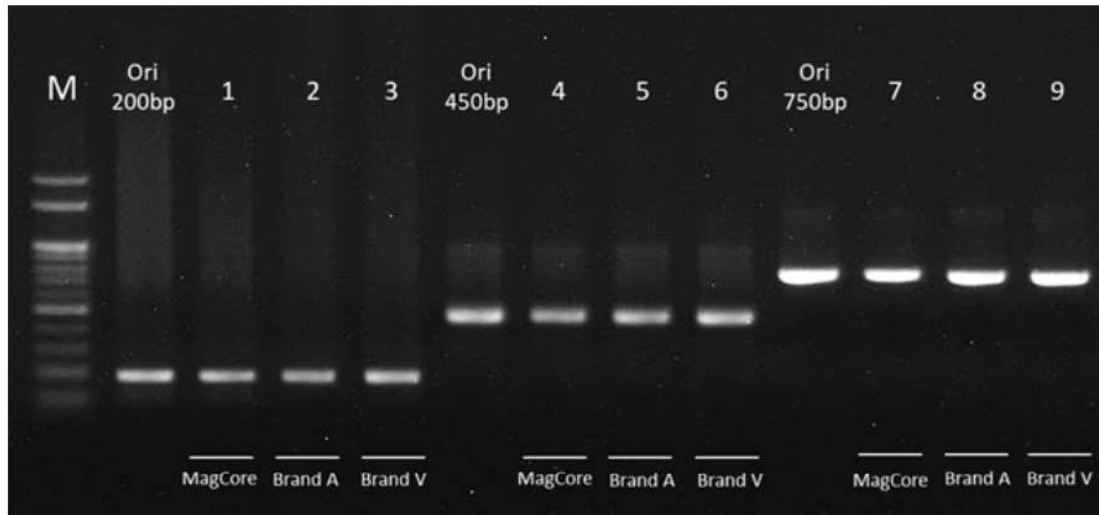


*Red Line:* Before DNA Clean-up

*Blue Line:* After DNA Clean-up

## Comparison of DNA Cleanup methods

MagCore NGS-Clean up Kit: results of the automatic cleanup of DNA sample are comparable with Brand A and Brand V manual kits, resulting in high purity product with >80% recovery.



M: 100bp Marker.

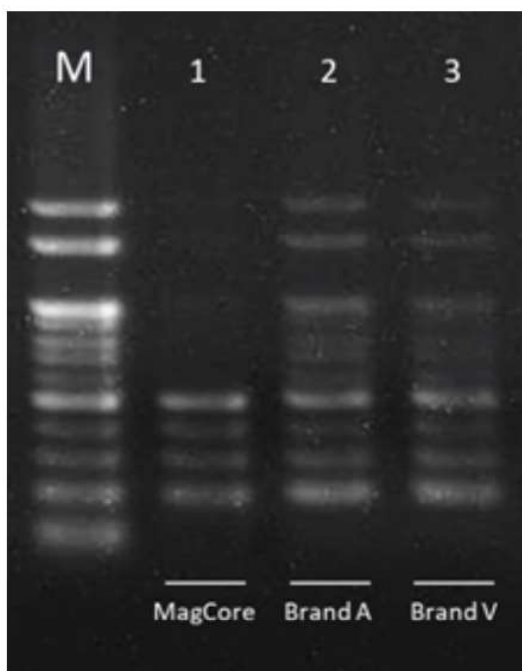
Lane 1, 4, 7: MagCore NGS-Clean up Kit cleanup DNA sample with 701A program.

Lane 2, 5, 8: Brand A manually cleanup DNA sample.

Lane 3, 6, 9: Brand V manually cleanup DNA sample.

## Linear Increase in DNA yield

MagCore NGS-Clean up Kit is completely automated and can effectively size select DNA from 200-500bp, while Brand A and Brand V contain larger DNA fragments in the final product.



M: 100bp Marker.

Lane 1: MagCore NGS-Clean up Kit size select 200-500bp with 701B program.

Lane 2: Brand A manually size select 200-500bp.

Lane 3: Brand V manually size select 200-500bp.



## Product Introduction and Average Recovery

Program	Program Description	Average Recovery (%)
701A	<b>DNA Cleanup</b>	<b>&gt;80%</b>
701B	<b>DNA Size Selection 200-500bp</b>	<b>40-60%</b>
701C	<b>DNA Size Selection 100-200bp</b>	<b>&gt;50%</b>

## Conclusion

Overall runtime for Automated DNA Cleanup and Size Selection is ~ 30min and eliminates human interaction with DNA samples. It simplifies the workflow and improves efficiency while providing precise size range selection with high recovery Rate.

The results are consistent and repeatable.

## MagCore® NGS Clean-up Kit

For 50ul sample volumes.

Contents: Pre-Filled Cartridges, Disposable Tip & Holder Sets, Sample Tubes, Elution Tubes

Shelf life: 18 months

<b>701</b>	<i>36 preps</i>	<i>96 preps</i>	<i>Runtime</i>
	MNC-01	MNC-02	35 min



**RBC Bioscience Corp.**

[www.rbcbioscience.com](http://www.rbcbioscience.com)

[info@rbcbioscience.com](mailto:info@rbcbioscience.com)



RBC Bioscience Corp.  
3F., No.132, Ln. 235, Baoqiao Rd., Xindian Dist.,  
New Taipei City 23145, TAIWAN.  
TEL : +886-2-8912-1200 FAX : +886-2-8912-1300



Obelis s.a (obelis.net) Bd. Général  
Wahis 53 1030 Brussels, BELGIUM

