



ZYMO RESEARCH

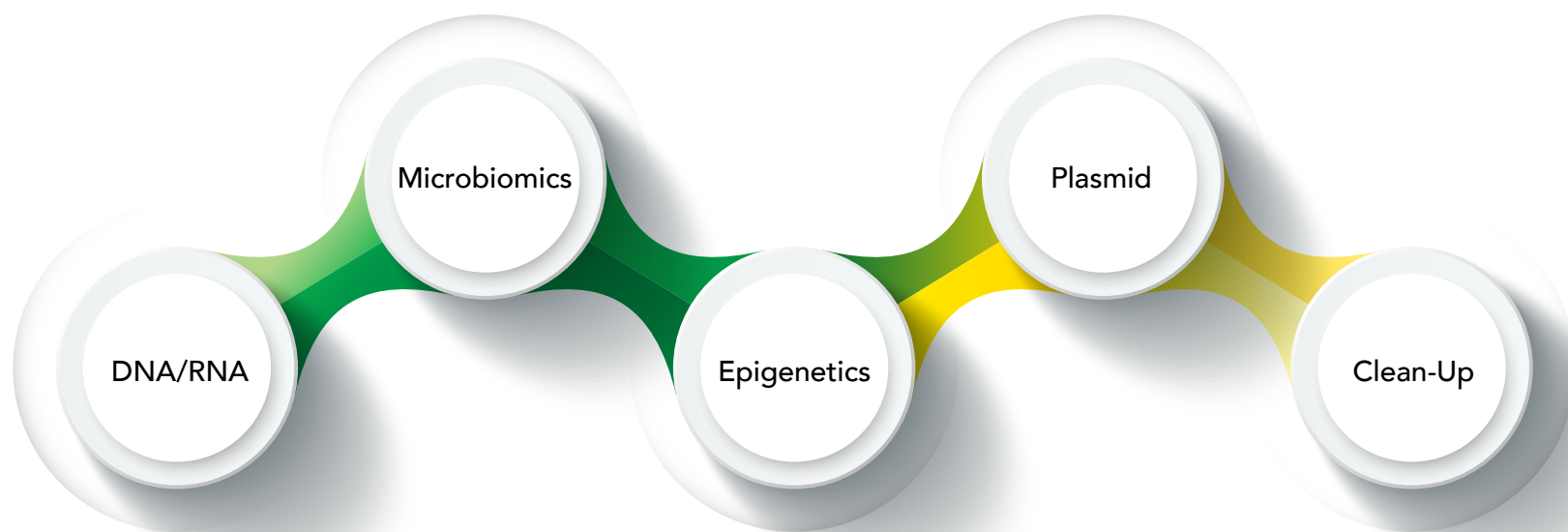
The Beauty of Science is to Make Things Simple



Personalized Lab Automation

PLUG-AND-PLAY DNA/RNA PURIFICATION

HIGH-THROUGHPUT AUTOMATED SOLUTIONS



- 4-5** Personalized Automation Support
- 6** Consistency & Cross Contamination
- 7** DNA from any Sample
- 8** DNA/RNA from any Sample
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- 14** DNA/RNA Clean-Up and Size Selection
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PERSONALIZED AUTOMATION SUPPORT

TOTAL CUSTOMIZATION & FLEXIBILITY

Users have access to unlimited flexibility and custom designed magnetic bead workflows for any application. Entirely new workflows can be built to meet user needs including preps requiring: specific yields, difficult sample types, wide range of processing volumes, and much more. We support your automation needs every step of the way, making the entire process easy and simple.



ROBOTIC PLATFORM EXPERTISE

Customized scripts are provided and ready-to-deploy on industry leading platforms including Hamilton, Tecan, Thermo Fisher, and many more. Contact us today to receive a specific script for your robotic platform!

CONSISTENT RESULTS. EVERYTIME.

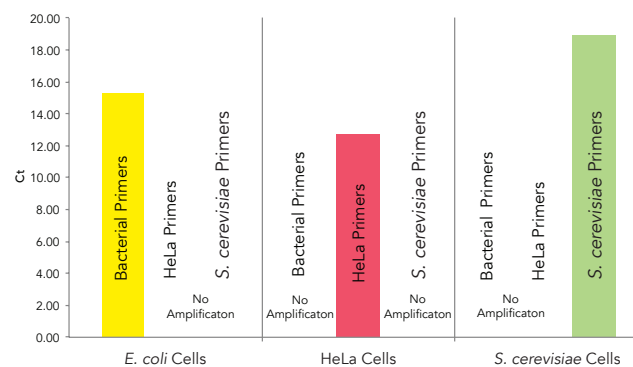
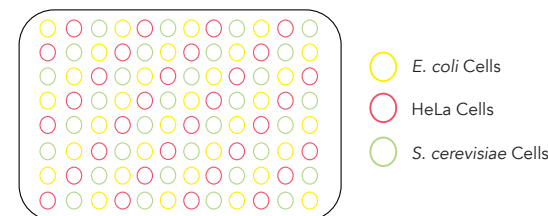
All MagBead kits from Zymo Research feature consistent yields and reproducible performance without the risk of cross contamination between sample wells for every run. Zymo Research guarantees that all custom designed scripts are fine-tuned at each pipetting step to ensure that no mishandling of liquid transfer occurs. Workflows are completed fast and efficiently, typically taking approximately one hour.

Reproducible Sample Processing



When 36 replicates of 200 μl blood samples from the same donor are processed, consistent and accurate yields are recovered in every sample. Average $A_{260}/A_{230} \geq 1.8$.

No Cross Contamination



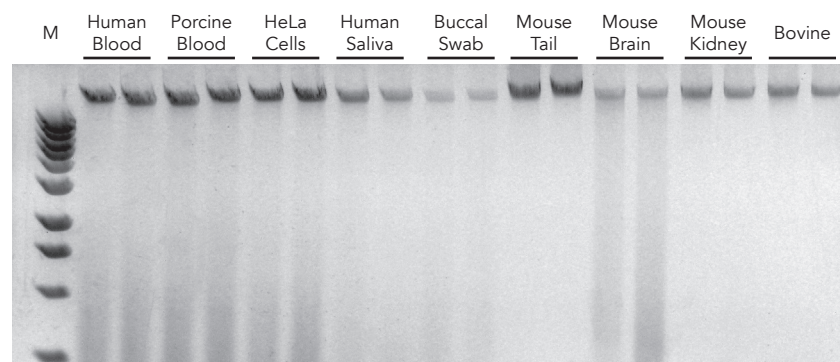
DNA is free from cross contamination when purified with a liquid handler across a 96-well plate. The plate was setup with alternating rows of *E. coli* bacterial cells, HeLa cells, and *S. cerevisiae* yeast cells then simultaneously purified. Samples were evaluated using qPCR in duplicates.

DNA FROM ANY SAMPLE

Quick-DNA™ (blood, cells, tissue, soil, feces, etc.)

- **Flexible:** Adjustable sample input from any source (up to 2 ml or 200 mg)*.
- **Highest Yield:** Recover 3x more DNA.
- **Ultra-Pure:** Ready for qPCR, Next-Gen Sequencing, arrays, etc.

Compatible with Any Sample Type

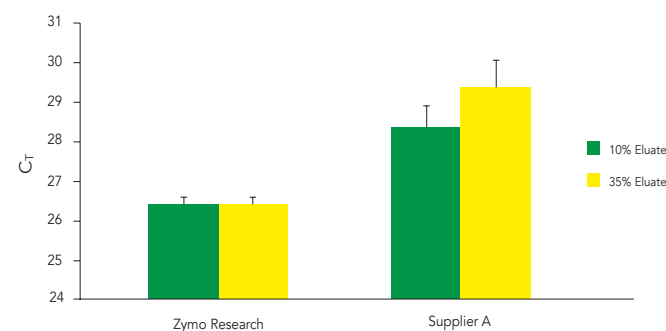


DNA purified from a wide range of biological samples using the Quick-DNA™ MagBead Plus Kit is ultra-pure, highly concentrated, and ready for all downstream applications. Input DNA was analyzed in a 1% (w/v) TAE/agarose/EtBr gel. The size marker "M" is a 1 kb ladder.

Product	Cat. No.	Size
Quick-DNA™ MagBead Plus Kit	D4081	1 x 96 preps
Quick-DNA™ Fecal/Soil Microbe 96 MagBead Kit	D6011-FM	2 x 96 preps

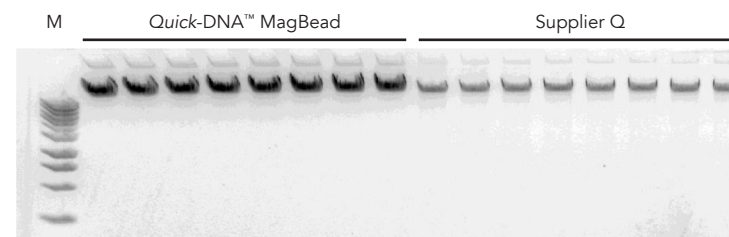
* Larger volumes can also be processed by contacting our team.

Inhibitor-Free



Real-time PCR was used to evaluate 10% or 35% of eluates recovered using the Quick-DNA™ Fecal/Soil Microbe or Supplier A to detect PCR inhibitors. Delayed amplification indicates PCR inhibition from inefficient inhibitor removal (n=8).

Superior Yields



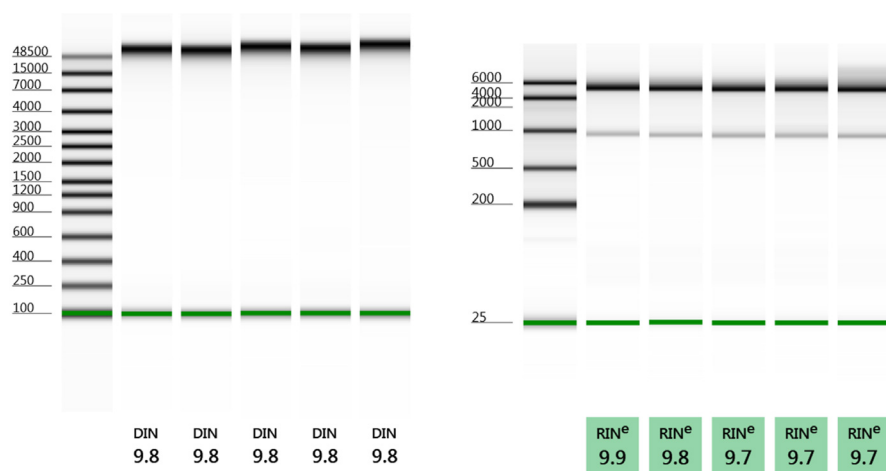
Replicate samples of 200 µl human whole blood were purified using Quick-DNA™ or a Supplier Q kit. Input DNA was analyzed in a 1% (w/v) TAE/agarose/EtBr gel. Average A260/230 ≥ 1.8. The size marker "M" is a 1 kb ladder.

DNA/RNA FROM ANY SAMPLE

Quick-DNA/RNA™ (cells, any tissue, blood)

- **Flexible:** Purify genomic DNA and total RNA (including small/micro RNAs) in a single elution or extract sequentially.
- **High Yields:** Consistently recover more nucleic acids.
- **NGS-Ready:** DNA/RNA is ready for all downstream applications including Next-Gen Sequencing, RT-qPCR, hybridization, etc.

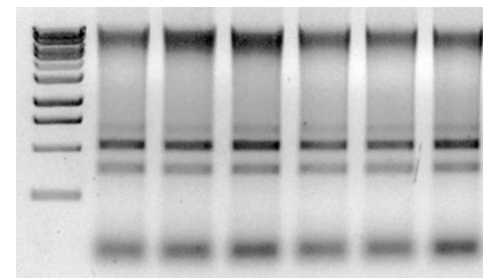
High-Quality DNA and RNA



DNA (left) and RNA (right) quality assessed using Agilent 2200 TapeStation®. DNA and RNA were sequentially purified (two separate elutions) from HeLa cells using the Quick-DNA/RNA™ MagBead kit.

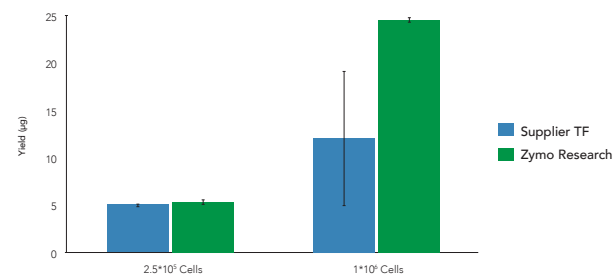
Product	Cat. No.	Size
Quick-DNA/RNA™ MagBead Kit	R2130	1 x 96 preps

Co-Purification of Total Nucleic Acid



High-quality total DNA and RNA was purified from human stool using the Quick-DNA/RNA™ MagBead kit. Elutions were analyzed in a 1% TAE/agarose/EtBr gel. The size marker is a 1 kb ladder.

Consistently High Yields



RNA yields are significantly higher when larger sample inputs are used with the Quick-DNA/RNA™ MagBead kit compared to a Supplier TF kit. 2.5*10⁵ and 1*10⁶ HeLa cells were used as input (n=2).

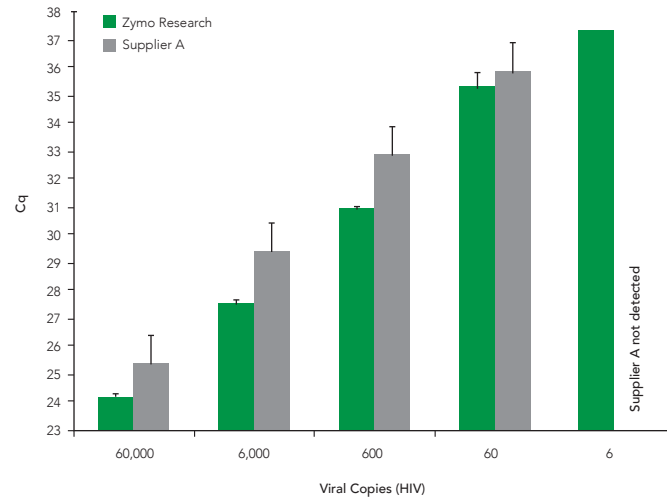
PATHOGEN DNA/RNA FROM ANY SAMPLE

Quick-DNA/RNA™ Viral (serum, plasm, biological liquids, swabs, feces)

Quick-DNA/RNA™ Pathogen (cells & tissue, vectors including mosquitoes/fleas/ticks/etc.)

- **Streamlined Workflow:** Sample inactivation and easy one-step lysis enables fast processing.
- **High Sensitivity:** Optimized for low viral copy detection for Next-Gen Sequencing and RT-qPCR.

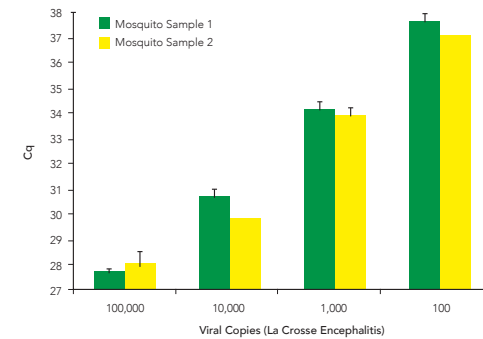
High Sensitivity Viral Detection from Plasma



Viral RNA isolated from plasma samples using the Quick-DNA/RNA™ Viral MagBead kit. Image shows average Cq values (in duplicate; +/- SD) from RT-PCR in comparison to Supplier A.

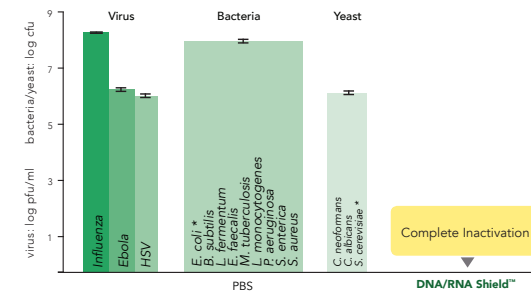
Product	Cat. No.	Size
Quick-DNA/RNA™ Viral MagBead Kit	R2140 R2141	1 x 96 preps 4 x 96 preps
Quick-DNA/RNA™ Pathogen MagBead Kit	R2145 R2146	1 x 96 preps 4 x 96 preps

High Sensitivity Detection from Mosquitoes



Hard-to-lyse mosquito vectors were homogenized using ZR BashingBeads™ and purified using the Quick-DNA/RNA™ Pathogen kit. La Crosse Encephalitis RNA was detected by RT-qPCR down to 100 viral copies.

Viral Inactivation



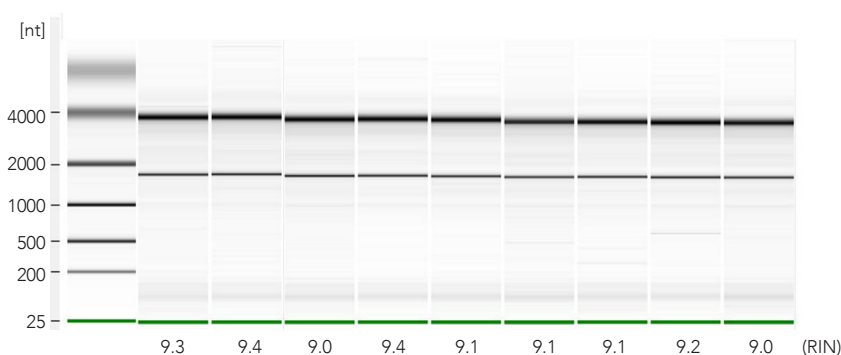
Viruses, bacteria, and yeast are effectively inactivated by DNA/RNA Shield™ (included in workflow) compared to mock (PBS) treatment for 5 minutes. Titer was subsequently determined by plaque assay (PFU) or growth assay (CFU).

RNA FROM ANY SAMPLE IN TRIzol*

Direct-zol™ RNA (blood, cells, tissue, etc.)

- **Easy Handling:** No phase separation, centrifugation, or precipitation steps.
- **NGS-Ready:** Ultra-pure RNA without phenol carryover. No DNA contamination (DNase I included).
- **Non-Biased:** Complete RNA recovery without miRNA loss.

High-Quality RNA from Any Sample in TRIzol®

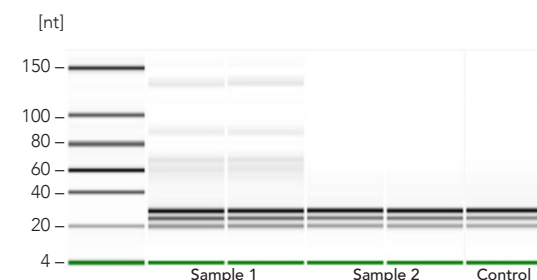


RNA quality assessed using a Bioanalyzer®. RNA was purified from human epithelial cells using the Direct-zol™-96 MagBead RNA on Freedom EVO® (Tecan).

Product	Cat. No.	Size
Direct-zol™-96 MagBead RNA Kit	R2100	2 x 96 preps
Direct-zol™-96 MagBead RNA Kit (with TRI-Reagent®)	R2101	2 x 96 preps

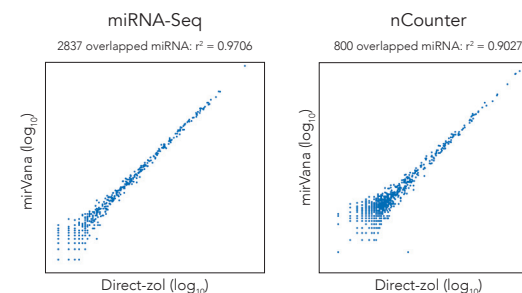
*Compatible with samples stored in TRIzol®, TRI-Reagent®, RNAzol®, QIAzol®, and all other acid-guanidinium-phenol reagents.

Efficient Small RNA Recovery



Small RNA recovery with the Direct-zol™-96 MagBead RNA. Bioanalyzer® (Small RNA Chip) gel image shown.

Non-Biased miRNA Recovery



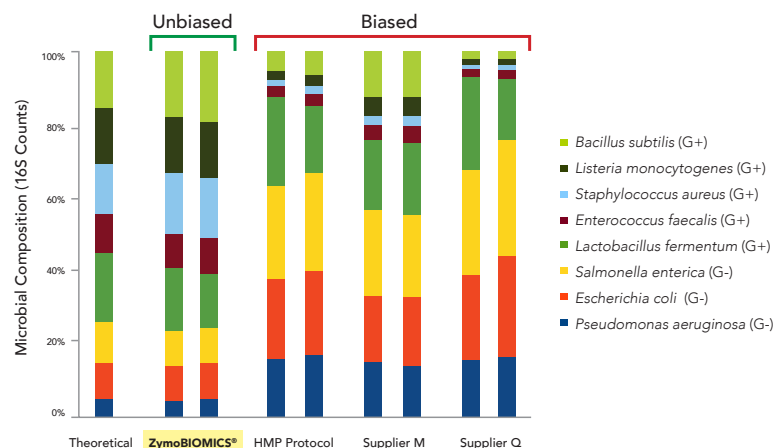
RNA purified from TRIzol® using Direct-zol™ RNA compared to an unbiased method (mirVana™, Ambion). Micro-RNA analysis was performed using miRNA-Seq (MiSeq®, Illumina) and a direct hybridization assay (nCounter®, Nanostring).

MICROBIOME-GRADE DNA/RNA FROM ANY SAMPLE

ZymoBIOMICS® DNA/RNA Purification (feces, soil, water, biofluids, biofilms, etc.)

- **Unbiased Lysis:** Efficient and unbiased lysis of microbes including gram positive/negative bacteria, fungi, protozoans, viruses, etc.
- **Ultra-Pure:** DNA/RNA is inhibitor-free and ready for qPCR and microbiome measurements using Next-Gen Sequencing.
- **High Sensitivity:** Increased detection limit of very low abundance organisms. Certified low bioburden.

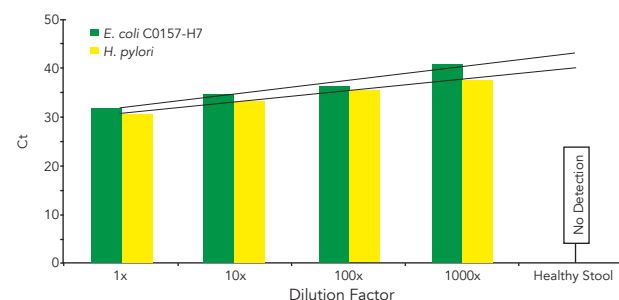
Accurate Community Profiling



The ZymoBIOMICS® DNA kits provide accurate representation of the organisms extracted from the ZymoBIOMICS® Microbial Community Standard when compared with other extraction methods (Human Microbiome Project Protocol, Supplier M, Supplier Q).

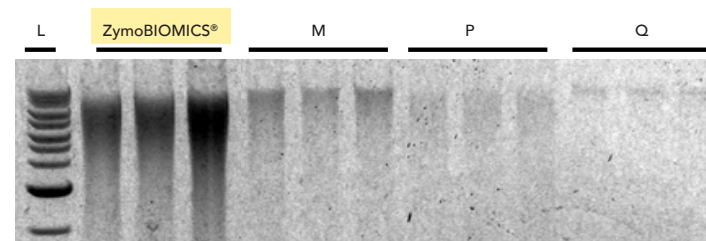
Product	Cat. No.	Size
ZymoBIOMICS®-96 MagBead DNA Kit (Includes ZR BashingBead™ Lysis Tubes)	D4308	2 x 96 preps
ZymoBIOMICS® DNA/RNA MagBead Kit (Lysis Matrix Not Included)	R2135	1 x 96 preps

Linear Recovery



A dilution series using stool infected with 1×10^6 shiga-toxin producing *E. coli* O157:H7 and stool infected with *H. pylori* shows effective purification and linear qPCR amplification, even at 1000:1 dilution ($n=8$).

Superior Yields



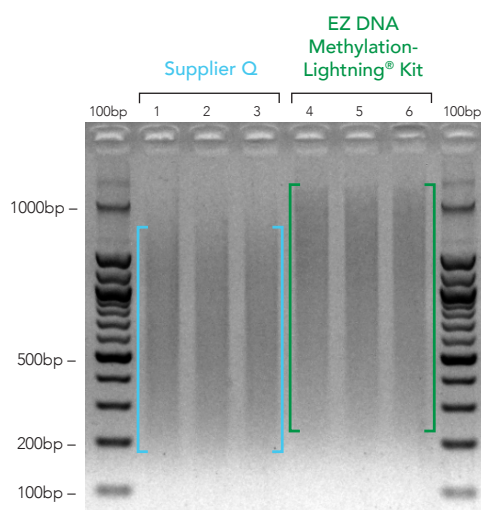
The ZymoBIOMICS® DNA Kits provides superior yields when compared to Suppliers M, P, and Q. 80 mg of feces was processed using each kit according to the manufacturers' recommended protocol. Elutions were analyzed in a 1.0% (w/v) TAE/agarose/EtBR gel. L is a 1 kb ladder.

HIGH-THROUGHPUT DNA BISULFITE CONVERSION

EZ DNA Methylation™ (Bisulfite Conversion Kit)

- **Fast Bisulfite Conversion:** Optimized bisulfite chemistry ensures improved conversion rate of DNA and reliable results.
- **Streamlined Workflow:** Built-in desulphonation maximizes efficiency and reduces kit processing time.
- **Ready for Analysis:** Ultra-pure DNA is ready for PCR, MSP, array, Next-Gen Sequencing, and other molecular assays.

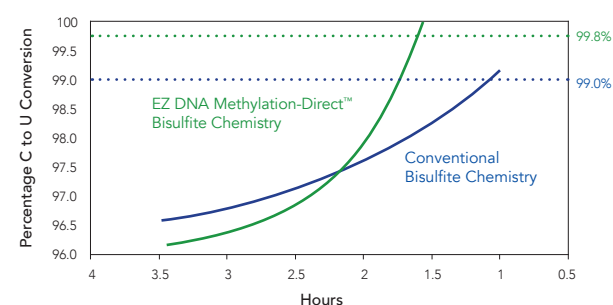
High-Quality Intact DNA



The EZ DNA Methylation-Lightning™ Kit yields more intact DNA after bisulfite conversion than the comparable kit from Supplier Q.

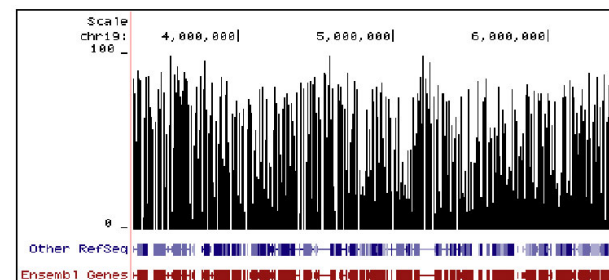
Product	Cat. No.	Size
EZ-96 DNA Methylation™ MagPrep Kit	D5040	4 x 96 preps
EZ-96 DNA Methylation-Gold™ MagPrep Kit	D5042	4 x 96 preps
EZ-96 DNA Methylation-Direct™ MagPrep Kit	D5044	4 x 96 preps
EZ-96 DNA Methylation-Lightning™ MagPrep Kit	D5046	4 x 96 preps

Improved Bisulfite Chemistry



Methylated DNA was converted using either conventional or EZ DNA Methylation-Direct™ bisulfite chemistries. Direct bisulfite chemistry improves the rate and extent (> 99.8%) of C to U conversion of DNA as compared to conventional methods.

High-Quality Methylation Data



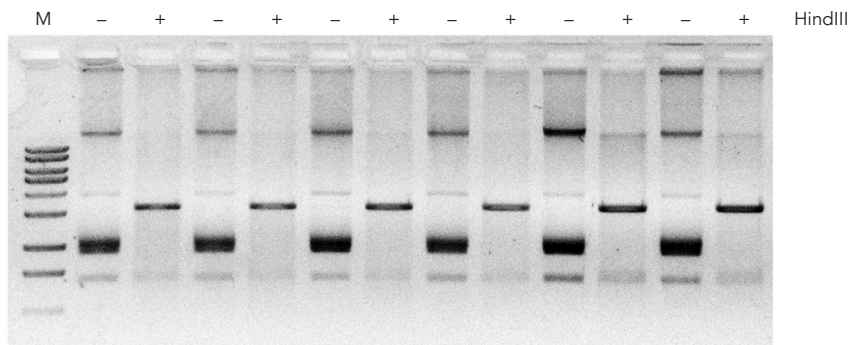
Methylation Plot From Reduced Representation Bisulfite Sequencing (RRBS). Data shows the relative methylation % at individual CpG sites in mouse DNA. Methylation percentage is shown across a ~3 Mb region of mouse chromosome 19.

PELLET-FREE PLASMID PURIFICATION

Zyppy™ Plasmid Purification

- **No Centrifugation Required:** Pellet-free procedure omits traditional *E. coli* resuspension and lysate pelleting.
- **Transfection Ready:** Well suited for PCR, sequencing, cloning, transfection, and restriction enzyme digestion.
- **Ideal for Synthetic Biology:** Fastest high-throughput automated method for preparing high quality plasmid DNA.

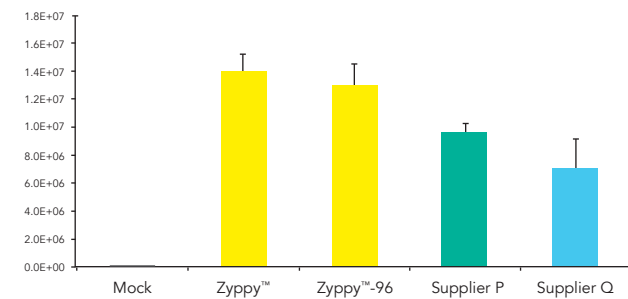
High-Quality Plasmid DNA



Plasmid DNA (pGEM-3Zf(+)) was purified then digested with HindIII for one hour at 37°C. Both undigested (– lanes) and digested (+ lanes) samples were separated in a 1.0% agarose gel. The undigested samples show supercoiled plasmid, while the digested samples show the linearized 3,197 bp fragment, single band in each digested lane.

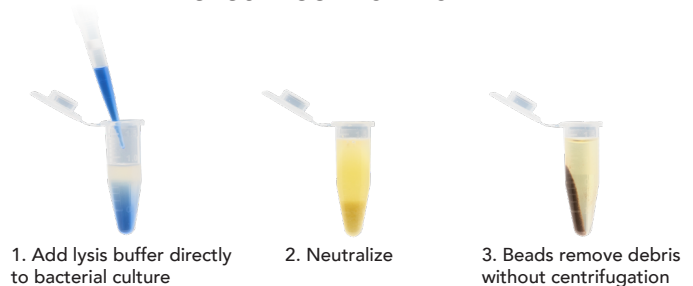
Product	Cat. No.	Size
Zyppy™-96 Plasmid MagBead Miniprep Kit	D4100	2 x 96 preps

High Transfection Efficiency



Plasmid DNA isolated with Zyppy™ show the highest transfection efficiencies. Luciferase activities, determined from transfected cells, were compared to products from Suppliers P and Q, as well as a mock control.

Pellet-Free Workflow



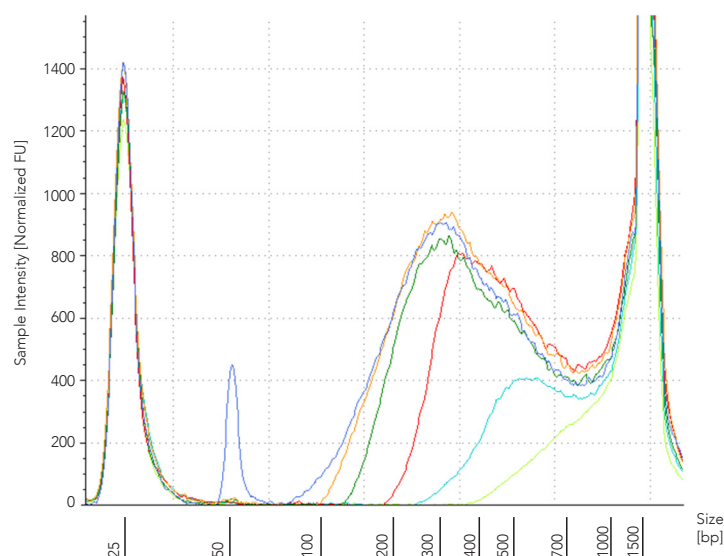
Workflow exemplary of automated procedure: Lysis buffer is added directly to *E. coli* culture with no centrifugation or pelleting necessary. MagClearing Beads are added following neutralization to remove cell debris resulting in a cleared supernatant.

DNA/RNA CLEAN-UP AND SIZE SELECTION

DNA/RNA Clean & Concentrator™ (library preparations, PCR, restriction digests, etc.)

- **Ultra-Pure:** Clean-up DNA and/or RNA (including small RNAs (≥ 17 nt)).
- **Size Selection:** Left-sided, right-sided, or double size selection can be tuned from 100 bp to 1,000 bp.
- **NGS-Ready:** High-quality DNA/RNA is well suited for Next-Gen Sequencing, PCR, arrays, etc.

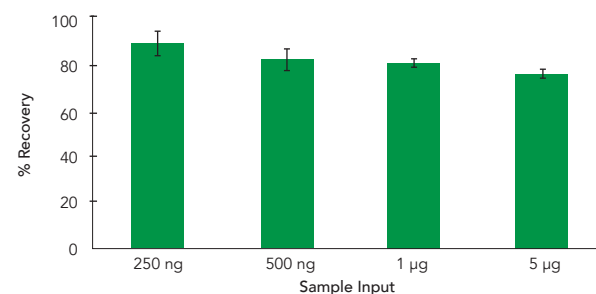
Accurate Size Selection



Select-a-Size DNA Clean & Concentrator® MagBead Kit allows for left-sided selection at ≥ 400 bp, ≥ 300 bp, ≥ 200 bp, ≥ 150 bp, and ≥ 100 bp. The results were analyzed by Agilent 2200 TapeStation®. 1 μ g of sonicated salmon sperm DNA in water was used as a standard input to evaluate size selection efficiency and cutoff.

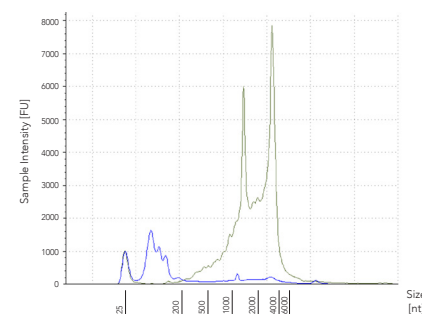
Product	Cat. No.	Size
Select-a-Size DNA Clean & Concentrator® MagBead Kit	D4084	10 ml
RNA Clean & Concentrator™ MagBead Kit	R1081	10 ml

High DNA Recovery



Select-a-Size DNA Clean & Concentrator® MagBead shows efficient recovery at different concentrations. DNA recovery ($\geq 80\%$) is consistent from low to high genomic DNA input ($n=3$).

Small RNA Separation



Small RNA (< 200 nt) is separated from large RNA (> 200 nt) using the RNA Clean & Concentrator™ MagBead. Size analyzed by Agilent 2200 TapeStation®.

COMPLETE LIST OF AUTOMATION SOLUTIONS

Product	Cat. No.	Size
EZ-96 DNA Methylation™ MagPrep Kit	D5040 D5041	4 x 96 preps 8 x 96 preps
EZ-96 DNA Methylation-Gold™ MagPrep Kit	D5042 D5043	4 x 96 preps 8 x 96 preps
EZ-96 DNA Methylation-Direct™ MagPrep Kit	D5044 D5045	4 x 96 preps 8 x 96 preps
EZ-96 DNA Methylation-Lightning™ MagPrep Kit	D5046 D5047	4 x 96 preps 8 x 96 preps
ZymoBIOMICS®-96 MagBead DNA Kit (Includes ZR BashingBead™ Lysis Rack)	D4302	2 x 96 preps
ZymoBIOMICS®-96 MagBead DNA Kit (Lysis Matrix Not Included)	D4306	2 x 96 preps
ZymoBIOMICS®-96 MagBead DNA Kit (Includes ZR BashingBead™ Lysis Tubes)	D4308	2 x 96 preps
ZymoBIOMICS® DNA/RNA MagBead Kit (Lysis Matrix Not Included)	R2135 R2136	1 x 96 preps 4 x 96 preps
Quick-DNA™ MagBead Plus Kit	D4081 D4082	1 x 96 preps 4 x 96 preps
Quick-DNA™ Fecal/Soil Microbe 96 MagBead Kit (Includes ZR BashingBead™ Lysis Rack)	D6010-FM	2 x 96 preps
Quick-DNA™ Fecal/Soil Microbe 96 MagBead Kit (Lysis Matrix Not Included)	D6011-FM	2 x 96 preps
Quick-DNA™ Fecal/Soil Microbe 96 MagBead Kit (Includes ZR BashingBead™ Lysis Tubes)	D6012-FM	2 x 96 preps

Product	Cat. No.	Size
Quick-DNA/RNA™ MagBead Kit	R2130 R2131	1 x 96 preps 4 x 96 preps
Quick-DNA/RNA™ Viral MagBead Kit	R2140 R2141	1 x 96 preps 4 x 96 preps
Quick-DNA/RNA™ Pathogen MagBead Kit	R2145 R2146	1 x 96 preps 4 x 96 preps
Direct-zol™-96 MagBead RNA Kit	R2100 R2102 R2104	2 x 96 preps 4 x 96 preps 8 x 96 preps
Direct-zol™-96 MagBead RNA Kit (with TRI-Reagent)	R2101 R2103 R2105	2 x 96 preps 4 x 96 preps 8 x 96 preps
Zyppy™-96 Plasmid MagBead Miniprep Kit	D4100 D4101 D4102	2 x 96 preps 4 x 96 preps 8 x 96 preps
Select-a-Size DNA Clean & Concentrator® MagBead Kit	D4084 D4085	10 ml 50 ml
RNA Clean & Concentrator™ MagBead Kit	R1081 R1082	10 ml 50 ml



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