ZYMO RESEARCH

The Beauty of Science is to Make Things Simple®

Apple
(Malus domestica)

Alligator
(Alligator mississippiensis)

Cow
(Bos taurus)

Barrel Clover
(Medicago truncatula)

Chicken
(Gallus gallus domesticus)

Platypus
(Ornithorhynchus anatinus)

Salmon
(Salmo salar)

Rat
(Rattus norvegicus)

Mouse
(Mus musculus)

Explore
Epigenomics

Human
(Homo sapien)

Wheat
(Triticum)

Dog
(Canis lupus familiaris)

Oppossum
(Didelphimorphia)

Soybean
(Glycine max)

Pig
(Sus scrofa domesticus)

Bean
(Phaseolus vulgaris)

Wine Grape
(Vitis vinifera)

Fruit Fly
(Drosophila melanogaster)

Rockcress
(Arabidopsis)

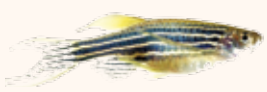
Baboon
(Papio anubis)

Guinea Pig
(Cavia porcellus)

Earthworm
(Lumbricina)

Cod
(Gadus morhua)

Sheep
(Ovis aries)



Zebrafish
(Danio rerio)

Zebra Finch
(Taeniopygia guttata)

Catalog 2015-2016

Catalog 2015-2016

ABOUT THE COVER

Explore Epigenomics With Us!

Epigenomics.... the new frontier. With the recent rise of the epigenetic field, a new world has emerged in our understanding of life's genetic blueprint. This new world is above and beyond the primary code. It sheds new light on how our primary code is organized and helps to explain how life works in regards to nature vs nurture, health vs illness, and old vs young or aging among a myriad of other topics. Scientists at Zymo Research have partnered with scientists like you to be among the first explorers of this new world. Some of the species epigenetically analyzed by our team are depicted on the front cover. We invite you to Explore Epigenomics with Us!

Learn more at
www.zymoresearch.com/ExploreEpigenomics

Artistic Rendition by Linda Jia

Made Simple™ …The Zymo Culture

Since its inception in 1994, Zymo Research has been proudly serving the scientific community by providing innovative, reliable, and high quality research tools at affordable prices. Our vision..."The Beauty of Science is to Make Things Simple" is now truer than ever. Whether it's epigenetics, DNA, RNA, *E. coli*, or yeast based research, our philosophy remains the same: To provide the highest quality products in the industry while ensuring they are both simple to use and reliable in their performance.

Zymo Research stands on three pillars which form the foundation of our company: Innovation, Quality, and Customer Service. These pillars are fundamental to our culture and ensure our products meet your needs.

Innovation

Zymo Research is historically recognized for its innovation of high quality nucleic acid purification technologies. Under the branding *DNA Purification Made Simple*™ and *RNA Purification Made Simple*™, our technologies are pushing the limits of what is possible with nucleic acid isolation. As T*he Epigenetics Company*™, Zymo Research has also received much attention for its rapidly expanding portfolio of epigenetics products and services. It is our objective to develop and provide the most comprehensive set of tools for DNA, RNA, and epigenetic research and analysis available today. Thousands of peer-reviewed scientific publications from researchers around the world feature our technologies. Through innovation, our scientists have made streamlined DNA methylation detection possible, pioneered the micro-elution column for DNA and RNA purification, developed the simplest and the most sophisticated methods for high-quality plasmid DNA purification, and patented the first RNA purification directly from Trizol® without phase separation among many other leading technologies in the industry.

Quality

At Zymo Research, we are committed to quality and guarantee that all of our products and service will meet and exceed your expectations. Our products are constantly evaluated by scientists like you to help ensure their reliability and the highest standard of quality.

Customer Service

At Zymo Research, we strive for excellence in how we support your scientific endeavors. We pledge to be honest and responsible for everything we do with you. We will treat you as we would like to be treated. Together, we will build a brighter future.

ISO 9001:2008 CERTIFIED
ASR Certificate #4628

QUALITY GUARANTEED

CONTENTS

ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®
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info@zymoresearch.com ▪ www.zymoresearch.com

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Irvine, CA 92614, USA

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All prices are subject to change without notice. Payment terms are Net 30 days from the invoice date unless an agreement has been previously established prior to ordering. Zymo Research reserves the right to correct any errors in the online system before shipping and billing. If you suspect an error in pricing, please contact our Customer Service Department at: 1-888-882-9682 or email us at: orders@zymoresearch.com.

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Unless specified, promotional codes cannot be combined with any other offers or codes.

Sampling
Sample kits (p. 189) are available for the evaluation of selected products (see specific product pages on our website: www.zymoresearch.com). Sample kits must be shipped to a valid business or institution address (no P.O. Boxes). Limit one sample kit of each type (three total per customer). Sample takes 1-2 weeks for delivery.

Bulk Orders/OEM
Zymo Research Corporation manufactures most of the products it sells and is pleased to offer discounts on bulk orders including those for OEM purposes. For inquiries, please email us at: busdev@zymoresearch.com.

Delivery
All orders received before 3:00 PM Pacific Standard Time Monday through Friday will be shipped the same day via FedEx®. Ice items ordered on Friday will ship the following Monday. Shipping charges are prepaid and added to the invoice. Customers can also use their own FedEx® account .

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Goods may not be returned for credit except with Seller's (i.e., Zymo Research Corporation) permission, and then only in strict compliance with Seller's return shipment instructions. Returned goods (other than defective products) must be returned freight prepaid by the customer and will not be accepted without prior authorization of Zymo Research. The goods must be returned in their original packaging and in resalable condition. Certain items may not be returned for credit. These items include: refrigerated or frozen products, reagents, standards which have passed their expiration dates, custom products or special orders, products missing labels, parts, or instruction manuals, and books, computer software and equipment removed from their original packaging. Any returned items may be subject to a 20% processing (restocking) fee.

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We warrant to you, our direct customer, that our goods shall conform substantially to the description of such goods as provided in our catalogs and literature accompanying the goods until their respective expiration dates or, if no expiration date is provided, for one year from the date of your receipt of such goods. THIS WARRANTY IS EXCLUSIVE, AND WE MAKE NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Our warranty shall not be effective if we determine, in our sole discretion, that you have altered or misused the goods or have failed to use or store them in accordance with instructions furnished by us. Our sole and exclusive liability and your exclusive remedy with respect to goods proved to our satisfaction (applying analytical methods reasonably selected by us) to be defective or nonconforming shall be the replacement of such goods free of charge, upon the return of such goods in accordance with our instructions, although at our discretion we may provide a credit or refund. IN NO EVENT SHALL WE BE LIABLE UNDER ANY LEGAL THEORY (INCLUDING BUT NOT LIMITED TO CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR WARRANTY OF ANY KIND) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES (INCLUDING BUT NOT LIMITED TO LOST PROFITS), EVEN IF WE HAD NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. If we manufacture custom goods for you based on instructions, specifications, or other directions you provide to us, we shall not be liable for the lack of sufficiency, fitness for purpose or quality of the goods to the extent attributable to such instructions, specifications, or other directions. We shall not be liable for any loss, damage or penalty as a result of any delay in or failure to manufacture, deliver or otherwise perform hereunder due to any cause beyond our reasonable control. Unless specified otherwise, products are for research use only and not intended for diagnostic purposes.

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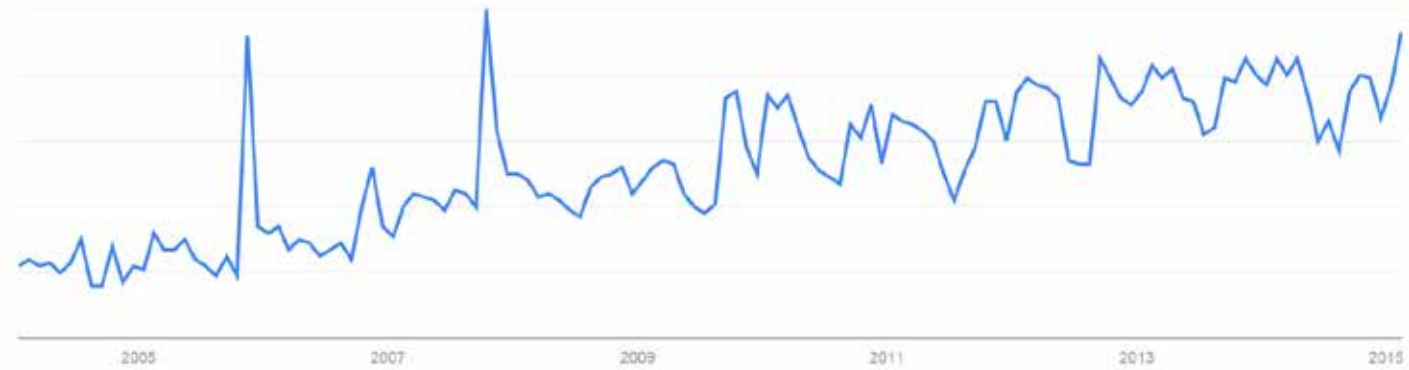
100% Satisfaction Guaranteed.

Zymo Research is committed to the highest standard of quality and assures your satisfaction with its products.

ISO 9001:2008 Certified

The Rapidly Growing Field of Epigenetics

In recent years, epigenetics has exploded into one of the most exciting and rapidly expanding fields in biology and Zymo Research has grown with it. Zymo Research understands the need for high-quality and reliable products for epigenetics research, and we offer an extensive and continually growing line of products, kits, and genome-wide services to facilitate investigations into epigenetic regulation of cellular processes. Zymo Research is committed to propelling the field of epigenetics forward by providing researchers of every discipline with the tools and knowledge needed to ensure experimental success.



Epigenetics on the rise: A quick look at epigenetics news trending over the last few years.
Source: Google Trends

1 Epigenetics

So, what is epigenetics?

The Greek prefix “epi” means “on top of” or “over”, so the term “Epigenetics” literally describes regulation at a level above, or in addition to, those of genetic mechanisms. The field of epigenetics was given its name and a vague definition only 50 years ago, but is now a dynamic and rapidly expanding discipline. Through epigenetics, the classic works of Charles Darwin, Gregor Mendel, Jean-Baptiste Lamarck, and others are now seen in a different light. Today, scientists are using epigenetics to investigate the roles of DNA, RNA, proteins, and environment in inheritance.

Epigenetic modifications can result in changes to the structure of chromatin, which is a complex of DNA and proteins, such as histones, that compact and organize DNA in cells. Epigenetic changes can be as stable and heritable as classical genetic mechanisms, and their regulation is very complicated and essential for many biological processes, including regulation of gene expression, development, and cellular differentiation. Epigenetic regulation can be mediated by DNA methylation and hydroxymethylation, and small and large non-coding RNAs.

DNA methylation is one of the most studied epigenetic modifications, both in terms of basic biology and biomarker discovery. Zymo Research is the industry leader in providing DNA methylation research products, including bisulfite conversion kits, which are considered by most as the “gold standard” for the study of DNA methylation. Zymo Research’s suite of EZ DNA Methylation™ products are the highest quality, most trusted, and most cited technologies. Furthermore, these innovative products feature the fastest methods available for complete bisulfite conversion of DNA. Zymo Research has also pioneered the use of bisulfite-free methods and locus-specific analysis procedures for the study of DNA methylation.

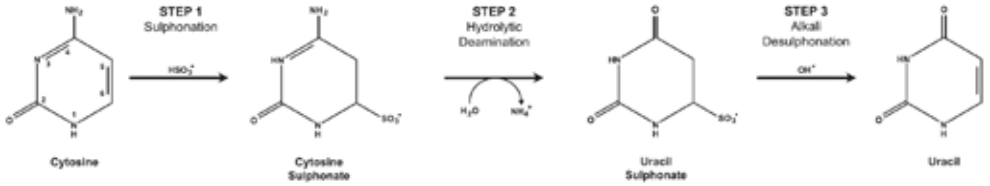
Zymo Research also offers the most comprehensive products and services to investigate other areas of epigenetics, including DNA hydryoxymethylation, chromatin immunoprecipitation and chromatin remodeling, as well as, small and large non-coding RNAs. Zymo Research now offers genome-wide and whole-genome epigenetic services for DNA methylation and hydroxymethylation, targeted methylation analysis, ChIP-Seq, and RNA-Seq – simply send in your samples, and you will receive publication-ready figures! Zymo research is committed to enhancing the study of epigenetics by providing researchers of every discipline with the tools and knowledge needed to help unravel the complexities of genetic regulation, cellular differentiation, embryology, aging, cancer, and other diseases.

EPIGENETICS

Tools for Navigating the Epigenetic Landscape

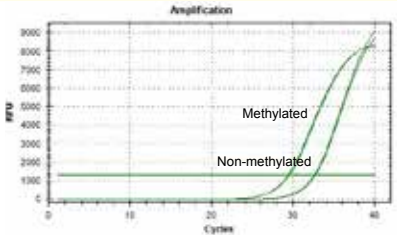
Bisulfite Treatment:

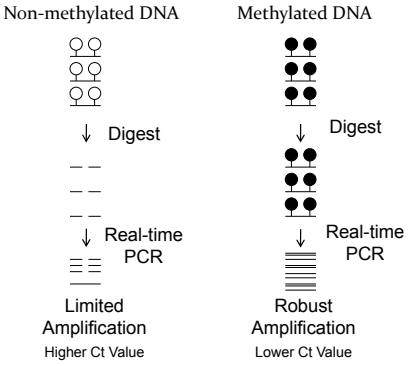
The gold standard for the analysis of DNA methylation, bisulfite treatment converts unmodified cytosine to uracil while methylated cytosines are protected from this conversion (EZ DNA Methylation™ Kits, p. 13-17). Sequence analysis post-treatment provides site specific information on DNA across the genome. This can be accomplished by PCR, hybridization, MSP, and Next-Gen sequencing.

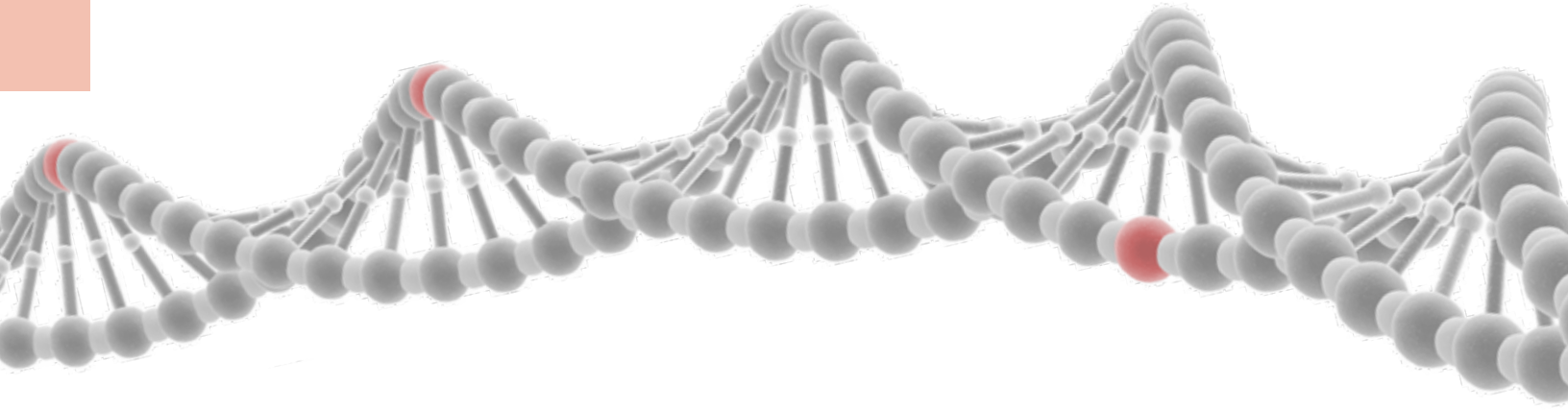


Locus Specific Analysis:

Simple bisulfite-free methods for investigation of 5-mC (*OneStep*™ qMethyl Kit™, p. 27) and 5-hmC (Quest 5-hmC™ Detection Kit, p. 30) levels can also be deployed for rapid screening of DNA methylation. By exploiting enzyme sensitivities to different epigenetic DNA modifications, differentially modified loci can be quickly and easily distinguished. These methods interrogate a gene's methylation content via quantitative PCR using primers designed for pre-validated gene loci or regions of interest.







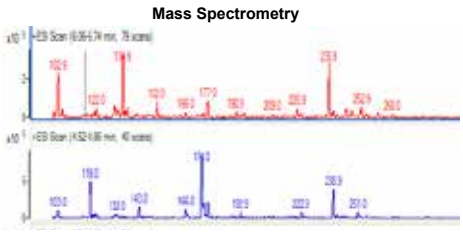
Schematic Overview of 5-hmC DNA Enrichment Kit Workflow

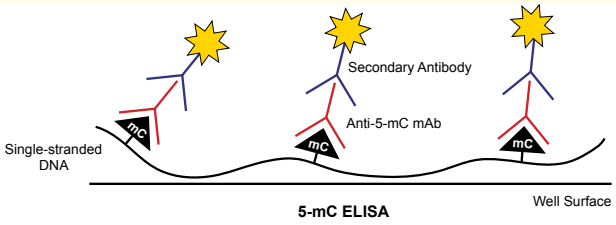
5-mC & 5-hmC DNA Enrichment:

Specific enrichment of methylated DNA (Methylated-DNA IP Kit, p. 26) and hydroxymethylated DNA (Quest 5-hmC™ Enrichment Kit, p. 32) is critical for the accuracy of enrichment-based sequencing analysis. This is facilitated by the use of sensitive and specific antibodies or proteins engineered to target DNA with these modifications.

Global Quantification:

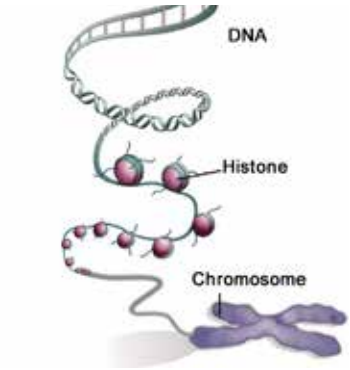
For understanding complicated changes in the epigenome, the simplest place to start is to determine global changes in DNA methylation. Overall levels of 5-mC and 5-hmC in DNA samples can be rapidly and accurately determined with specifically designed ELISAs (5-mC DNA ELISA Kit, p. 24 and Quest 5-hmC™ DNA ELISA Kit, p. 31). Enzymatic methods breaking down DNA to individual nucleosides are also available for analysis of epigenetic DNA methylation using mass spectrometry or HPLC.





Chromatin Analysis:

Chromatin immunoprecipitation is the prevailing method to investigate protein-DNA interactions on gene expression, such as histone modifications and transciption factors (Zymo-Spin™ ChIP Kit, p. 36).



Genome-wide Analysis:

Investigation of one or several genes may not be sufficient to provide answers to gene expression and their effects. Assessment of changes in methylation across the genome elucidates interactions across gene elements and mechanisms of development, aging, and cancer. Next-Gen sequencing technologies allow high-throughput data analysis and insight into these changes (p. 45-51).

Quick Product Guide

Epigenetics

DNA Methylation

Bisulfite Methods

EZ DNA Methylation™ Kits

Streamlined procedure for bisulfite conversion of DNA using specialized kits designed for different samples types.

D5001 Page 13-17

Format:
Spin Column
96-Well Plate

Pico Methyl-Seq™ Library Prep Kit

Post-bisulfite library preparation for Whole Genome Bisulfite Sequencing

D5455 Page 28

Non-Bisulfite Methods

***OneStep*™ qMethyl™ Kits**

Real-time PCR procedure for bisulfite-free determination of methylation status at specific loci.

D5310 Page 27

Format:
96-Well Plate

Antibody Methods

5-mC DNA ELISA Kit

High throughput method for accurate 5-mC detection in genomic DNA.

D5325 Page 24

Format:
96-Well Plate

MeDIP Kit

Highly specific enrichment of 5-mC in DNA by immunoprecipitation.

D5101 Page 26

Quick Product Guide

Epigenetics

DNA Hydroxymethylation

Quest 5-hmC DNA ELISA Kit

High throughput method for specific 5-hmC detection in genomic DNA.

D5425 Page 31

Format: 96-Well Plate

DNA Degradase™ Plus

Generate single nucleosides for global 5-hmC quantification by LC/MS.

E2020 Page 42

Chromatin Analysis

Zymo-Spin™ ChIP Kit

Protein-DNA interaction analysis.

D5209 Page 36

Format: Spin Column

ChIP DNA Clean & Concentrator®

Two minute DNA clean-up procedure for ChIP DNA.

D5201 Page 37

Format: Spin Column 96-Well Plate

RNA Methylation

EZ RNA Methylation™ Kit

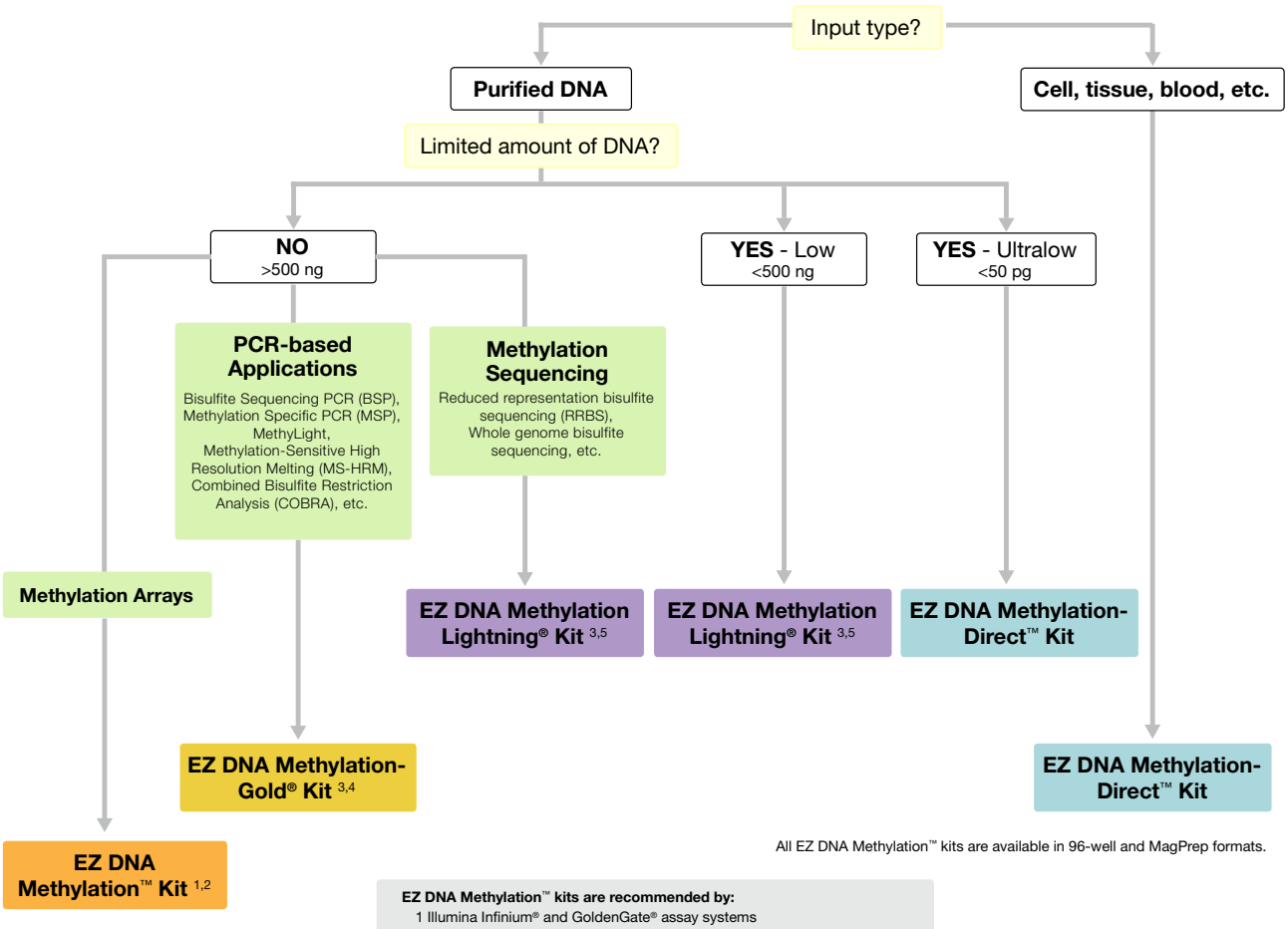
Fast and reliable bisulfite conversion of RNA for methylation analysis.

R5001 Page 18

Format: Spin Column

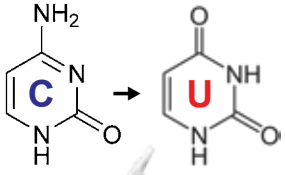
Technology Overview: EZ DNA Methylation™

The EZ DNA Methylation™ family of kits from Zymo Research remain the most popular as well as the most cited technologies available for bisulfite conversion and DNA methylation detection. They have been cited by countless researchers at academic institutions and in the biotechnology industry. The EZ DNA Methylation™ kits have been specifically engineered for complete conversion of as little as 50 pg of DNA in as fast as 1.5 hours reliably with high DNA recoveries. Kits are available in single column, 96-well plate and magnetic bead formats.



All EZ DNA Methylation™ kits are available in 96-well and MagPrep formats.

EZ DNA Methylation™ kits are recommended by:
1 Illumina Infinium® and GoldenGate® assay systems
2 Sequenom MassARRAY® EpiTYPER®
3 Epicentre EpiGnome™ Methyl-Seq kit
4 Agilent Technologies SureSelect^{XT} Methyl-Seq Target Enrichment System
5 Roche NimbleGen SeqCap Epi Enrichment System



The Importance of Conversion Efficiency

Conversion efficiency of cytosine to uracil is an important factor when selecting bisulfite conversion products. For applications such as bisulfite PCR, a conversion efficiency of 99% may be more than sufficient for the average researcher. More sensitive or broader scale applications, however, such as Reduced Representation Bisulfite Sequencing (*RRBS*) and pyrosequencing often require even greater stringency (>99.5%) as even 0.5% differences in conversion efficiency may be detected. This makes it imperative to choose conversion technologies that have been proven to consistently yield the highest possible efficiency. Zymo Research's EZ DNA Methylation™ Kits have a conversion efficiency ≥ 99%.

Innovators of the Low Elution Desulphonation Column

A core technology of Zymo Research's bisulfite DNA conversion kits is the Zymo-Spin™ IC column. Developed and manufactured exclusively by Zymo Research, its innovative design makes it ideal for rapid in-column desulphonation and high-yield elution of bisulfite-treated DNA. These unique columns allow purification of up to 5 µg of DNA in ≥ 6 µl eluate with no buffer retention or carryover.

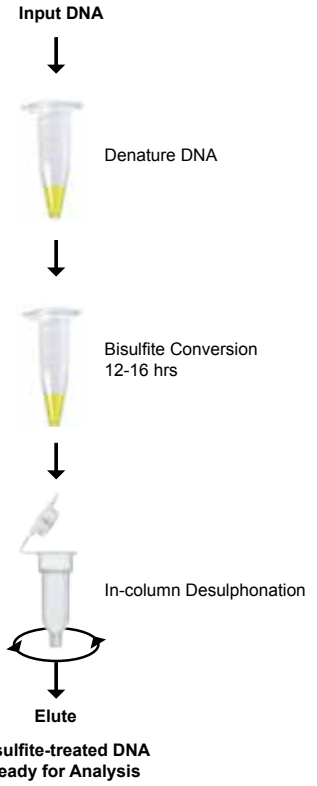
EZ DNA Methylation™ Kits

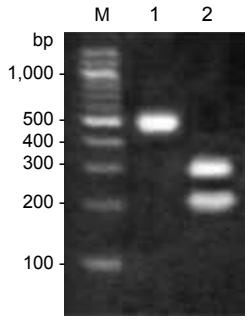
Highlights

- Streamlined, proven procedure for bisulfite conversion of DNA
- Desulphonation and recovery of bisulfite-treated DNA with spin column, 96-well plate, and magnetic bead format.
- Recovered DNA is ideal for downstream analyses including PCR, endonuclease digestion, sequencing, microarrays, etc.

Description

The EZ DNA Methylation™ Kits feature simplified procedures that streamline bisulfite treatment of DNA. The kits are based on the three-step reaction that takes place between cytosine and sodium bisulfite where cytosine is converted into uracil. Innovative desulphonation technologies eliminate otherwise cumbersome precipitations. The kits are designed to reduce template degradation, minimize DNA loss during treatment and cleanup, while ensuring complete conversion of the DNA. Purified, converted DNA is ideal for PCR amplification for downstream analyses including endonuclease digestion, sequencing, microarrays, etc. These kits are recommended with Illumina's *GoldenGate*® and *Infinium*® Assays.





Conversion of non-methylated cytosine. A 459 bp PCR product amplified from either DNA converted with the EZ DNA Methylation™ Kit (lane 1) or from untreated DNA (lane 2) was digested with EcoR I. The cytosine at the EcoR I site was converted to uracil during treatment, preventing cleavage of the DNA by the endonuclease.

Product	*Cat. No.*	*Size*
EZ DNA Methylation™ Kit	D5001 D5002	50 rxns. 200 rxns.
EZ-96 DNA Methylation™ Kit (shallow-well)	D5003	2 x 96 rxns.
EZ-96 DNA Methylation™ Kit (deep-well)	D5004	2 x 96 rxns.
EZ-96 DNA Methylation™ MagPrep	D5040 D5041	4 x 96 rxns. 8 x 96 rxns.

Use

Bisulfite Treatment..... ✓
Rapid Column/Plate/Bead Desulphonation..... ✓

Specifications

Input..... Purified DNA
Conversion Efficiency..... > 99%
DNA Recovery..... > 80%
Processing Time..... 12 - 16 hr.

EZ DNA Methylation™ Kit
Format..... Spin Column
Elution Volume..... ≥ 10 µl

EZ-96 DNA Methylation™ Kit
Format..... 96-Well
Elution Volume..... ≥ 15 µl

EZ-96 DNA Methylation™ MagPrep
Format..... Magnetic Beads
Elution Volume..... 25 µl
Automation Ready!

Available Formats

Zymo-Spin™ IC D5001, D5002 (p. 175)

Silicon-A™ Plate D5003 (p. 182)

Zymo-Spin™ I-96 D5004 (p. 182)

MagBinding Beads D5040, D5041 (p. 181)

EZ DNA Methylation-Gold® Kits

Use

Bisulfite Treatment..... ✓
Rapid Column/Plate/Bead Desulphonation..... ✓

Specifications

Input..... Purified DNA
Conversion Efficiency..... > 99%
DNA Recovery..... > 75%
Processing Time..... 3 hr.

EZ DNA Methylation-Gold® Kit
Format..... Spin Column
Elution Volume.....≥10 µl

EZ-96 DNA Methylation-Gold® Kit
Format.....96-Well
Elution Volume.....≥15 µl

EZ-96 DNA Methylation-Gold® MagPrep
Format.....Magnetic Beads
Elution Volume..... 25 µl
Automation Ready!

Zymo-Spin™ IC D5005, D5006 (p. 175)

Silicon-A™ Plate D5007 (p. 182)

Zymo-Spin™ I-96 D5008 (p. 182)

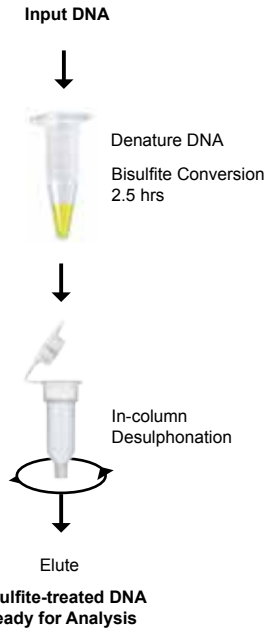
MagBinding Beads D5042, D5043 (p. 181)

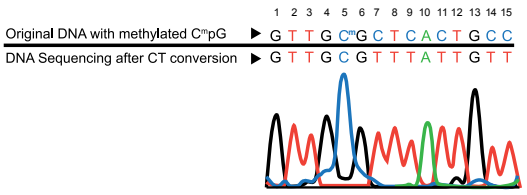
Highlights

- A coupled heat denaturation/conversion reaction step streamlines the conversion of non-methylated cytosines into uracil.
- Desulphonation and recovery of bisulfite-treated DNA with a spin column, 96-well plate, or magnetic beads.
- Recovered DNA is ideal for downstream analyses including PCR, endonuclease digestion, sequencing, microarrays, etc.

Description

The EZ DNA Methylation-Gold® Kits are refinements of our popular EZ DNA Methylation™ kits (see previous page). These products consolidate DNA denaturation and bisulfite conversion processes into one step, resulting in a much faster bisulfite conversion. Also, the kits have been streamlined for high yield recovery of DNA following bisulfite treatment. Recovered bisulfite-converted DNA is ideal for PCR amplification for downstream analyses including endonuclease digestion, sequencing, microarrays, etc.





DNA sequencing results after bisulfite treatment. DNA with methylated C^{m}pG (at nucleotide position 5) was processed using the EZ DNA Methylation-Gold® Kit. The recovered DNA was amplified by PCR and then sequenced directly. The methylated cytosine at position #5 remained intact while the unmethylated cytosines (i.e., positions #7, 9, 11, 14, and 15) were completely converted into uracil following bisulfite treatment and detected as thymine following PCR.

Product	*Cat. No.*	*Size*
EZ DNA Methylation-Gold® Kit	D5005 D5006	50 rxns. 200 rxns.
EZ-96 DNA Methylation-Gold® Kit (shallow-well)	D5007	2 x 96 rxns.
EZ-96 DNA Methylation-Gold® Kit (deep-well)	D5008	2 x 96 rxns.
EZ-96 DNA Methylation-Gold® MagPrep	D5042 D5043	4 x 96 rxns. 8 x 96 rxns.

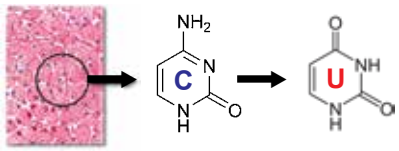
EZ DNA Methylation-Direct™ Kits

Highlights

- Complete bisulfite conversion of DNA directly from blood, soft tissue, cells, FFPE samples, and LCM samples.
- Compatible with small sample inputs - as few as 10 cells or 50 pg DNA.
- Desulphonation and recovery of bisulfite-treated DNA with a spin column, 96-well plate, or magnetic beads.

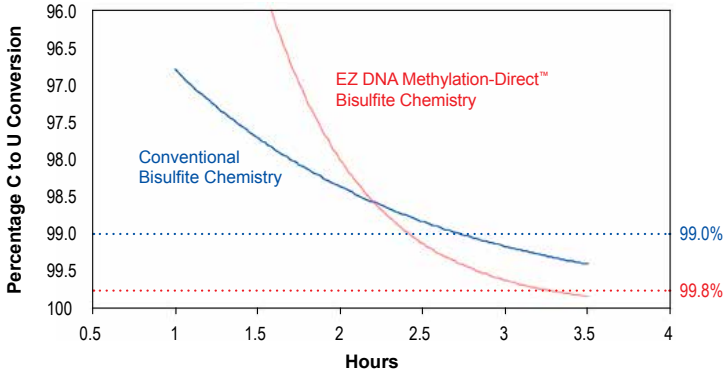
Description

The EZ DNA Methylation-Direct™ Kits are a further refinement of our popular EZ DNA Methylation™ and EZ DNA Methylation-Gold® kits (see previous pages). These products feature reliable and complete bisulfite conversion of DNA directly from blood, tissue, and cells without the prerequisite for DNA purification. The increased sensitivity of these kits make it possible to amplify bisulfite-converted DNA from as few as 10 cells or 50 pg DNA. Like the EZ DNA Methylation-Gold® kits, DNA denaturation and bisulfite conversion processes are combined into a single step. Recovered bisulfite-converted DNA is ideal for PCR amplification for downstream analyses including restriction endonuclease digestion, sequencing, microarrays, etc.



EZ DNA Methylation-Direct™ Kit can be used for DNA Methylation detection *directly* from blood, cells, and tissue.

EZ DNA Methylation-Direct™ Bisulfite Chemistry Significantly Improves C to U Conversion Kinetics



EZ DNA Methylation-Direct™ Kit bisulfite chemistry significantly improves C to U conversion kinetics. DNA was converted using either EZ DNA Methylation-Direct™ or conventional bisulfite chemistries. Recovered DNA was amplified by PCR, then cloned. Sequences from individual clones were analyzed and quantitated. These data show that EZ DNA Methylation-Direct™ bisulfite chemistry improves the rate and extent (> 99.8%) of C to U conversion of DNA as compared to conventional bisulfite chemistry.

Product	*Cat. No.*	*Size*
EZ DNA Methylation-Direct™ Kit	D5020 D5021	50 rxns. 200 rxns.
EZ-96 DNA Methylation-Direct™ Kit (shallow-well)	D5022	2 x 96 rxns.
EZ-96 DNA Methylation-Direct™ Kit (deep-well)	D5023	2 x 96 rxns.
EZ-96 DNA Methylation-Direct™ MagPrep	D5044 D5045	4 x 96 rxns. 8 x 96 rxns.

Use

Bisulfite Treatment..... ✓
Rapid Column/Plate/Bead Desulphonation..... ✓

Specifications

Input: DNA, Cells, Blood, Tissue, FFPE
Conversion Efficiency..... > 99.5%
DNA Recovery..... > 80%
Processing Time..... 4 hr.

EZ DNA Methylation-Direct™ Kit
Format..... Spin Column
Elution Volume..... ≥ 10 µl

EZ-96 DNA Methylation-Direct™ Kit
Format..... 96-Well
Elution Volume..... ≥ 15 µl

EZ-96 DNA Methylation-Direct™ MagPrep
Format..... Magnetic Beads
Elution Volume..... 25 µl
Automation Ready!

Zymo-Spin™ IC D5020, D5021 (p. 175)

Silicon-A™ Plate D5022 (p. 182)

Zymo-Spin™ I-96 D5023 (p. 182)

MagBinding Beads D5044, D5045 (p. 181)

EZ DNA Methylation-Lightning® Kits

Use

Rapid Bisulfite Treatment..... ✓
Rapid Column/Plate/Bead Desulphonation..... ✓

Specifications

Input..... Purified DNA
Conversion Efficiency.....>99.5%
DNA Recovery.....>80%

Processing Time.....1.5 hr.

EZ DNA Methylation -Lightning® Kit
Format..... Spin Column
Elution Volume.....≥10 µl

EZ-96 DNA Methylation -Lightning® Kit
Format.....96-Well
Elution Volume.....≥15 µl

EZ-96 DNA Methylation -Lightning® MagPrep
Format..... Magnetic Beads
Elution Volume.....25 µl
Automation Ready!

Available Formats

Zymo-Spin™ IC D5030, D5031 (p. 175)

Silicon-A™ Plate D5032 (p. 182)

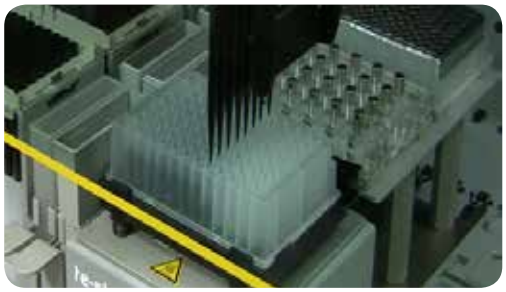
Zymo-Spin™ I-96 D5033 (p. 182)

MagBinding Beads D5046, D5047 (p. 181)

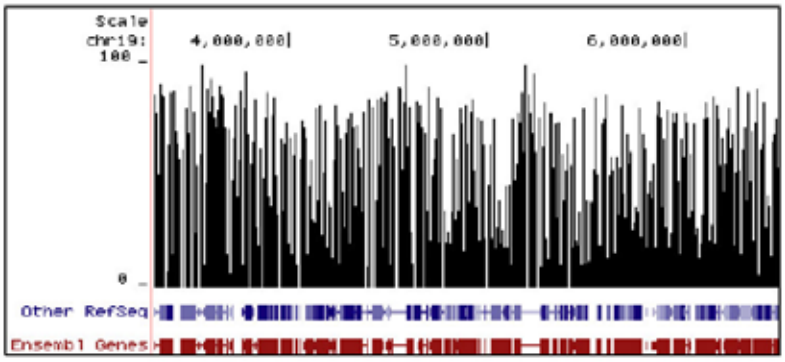
- Fastest method for complete bisulfite conversion of DNA for methylation analysis.
- Ready-to-use conversion reagent is added directly to DNA.
- High-yield, converted DNA is ideal for PCR, MSP, array, bisulfite and Next-Gen sequencing.

Description

The EZ DNA Methylation-Lightning® Kits feature rapid and reliable bisulfite treatment and conversion of DNA for methylation analysis. Key to the fast workflow is the ready-to-use Lightning Conversion Reagent. No preparation is necessary, simply add this unique reagent to a DNA sample, wait about an hour, and let the reaction proceed to completion. DNA denaturation and bisulfite conversion processes are combined with added heat to facilitate rapid denaturation. Desulphonation and clean-up of the converted DNA is performed using unique low-elution technologies. High yield, converted DNA is ideal for PCR, array, bisulfite and Next-Gen sequencing, etc.



Fully Automatable!



Methylation Plot From Reduced Representation Bisulfite Sequencing (RRBS). Data shows the relative percentage of methylation at individual CpG sites in mouse DNA. Methylation percentage is shown across a ~3 Mb region of mouse chromosome 19. Bisulfite sequencing libraries were prepared using mouse genomic DNA prepped with the Genomic DNA Clean & Concentrator® (p. 57) and bisulfite converted using EZ DNA Methylation™ technology prior to Next-Gen sequencing.

Product	*Cat. No.*	*Size*
EZ DNA Methylation-Lightning® Kit	D5030 D5031	50 rxns. 200 rxns.
EZ-96 DNA Methylation-Lightning® Kit (shallow-well)	D5032	2 x 96 rxns.
EZ-96 DNA Methylation-Lightning® Kit (deep-well)	D5033	2 x 96 rxns.
EZ-96 DNA Methylation-Lightning® MagPrep	D5046 D5047	4 x 96 rxns. 8 x 96 rxns.

EZ DNA Methylation-Startup™ Kit

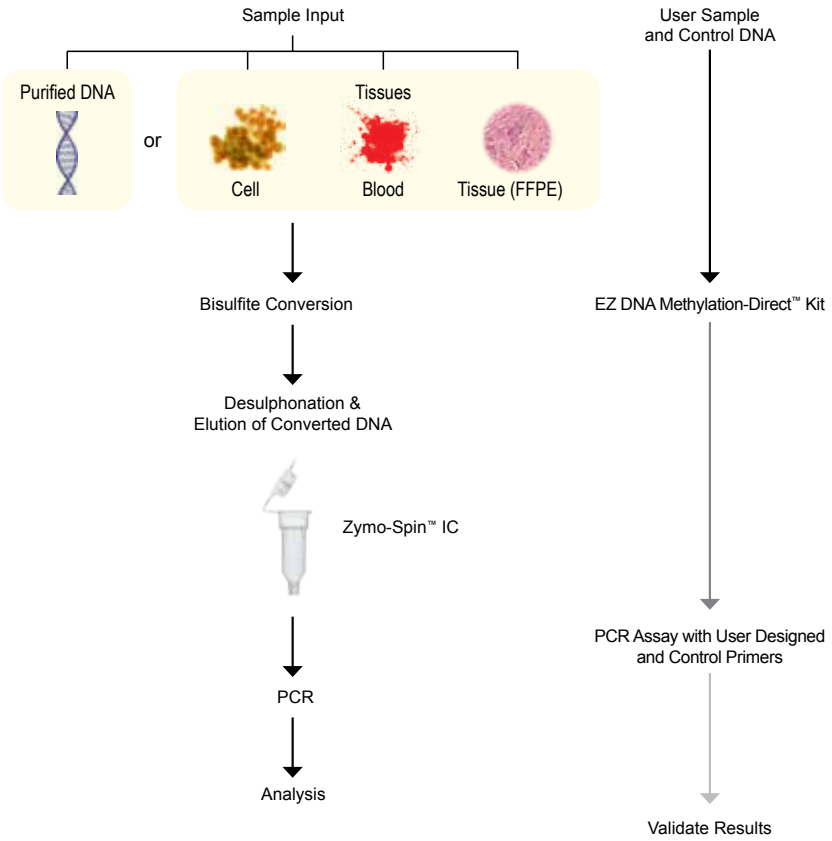
Highlights

- A complete system for DNA methylation detection: DNA bisulfite treatment, robust hot-start PCR, and a universally methylated human control DNA standard with primers.
- Designed for the first time user requiring a consolidated product to perform DNA methylation analysis.

Description

The EZ DNA Methylation-Startup™ Kit provides the necessary technologies required for complete bisulfite conversion of DNA for PCR and methylation analysis. This kit includes bisulfite conversion reagents that allow for use with purified DNA or direct sampling of blood, cells, and fresh or FFPE tissues without the prerequisite for upstream DNA purification (see EZ DNA Methylation-Direct™ Kit, p. 15). A fully methylated Universal Methylated Human DNA Standard (p. 22) is provided together with a special primer set for PCR to assess conversion efficiency. Finally, a unique Zymo*Taq*™ DNA Polymerase (p. 40) is included for robust amplification of bisulfite-treated DNA.

Workflow of the EZ DNA Methylation-Startup™ Kit



Product	*Cat. No.*	*Size*
EZ DNA Methylation-Startup™ Kit	D5024	50 rxns.

Use

Bisulfite Treatment..... ✓
Rapid Column Desulphonation.... ✓
Amplification of Bisulfite-converted DNA..... ✓

Specifications

Input: DNA, Cells, Blood, Tissue, FFPE
Conversion Efficiency..... > 99.5%
Format..... Spin Column
Elution Volume..... ≥ 10 µl
Conversion Efficiency..... > 99.5%
DNA Recovery..... > 80%
Bisulfite Conversion Time..... 4 hr.

Includes:

Universal Methylated Human DNA Standard (D5011)

EZ DNA Methylation -Direct™ Kit (D5020)

Zymo*Taq*™ DNA Polymerase (E2003)

Available Format

Zymo-Spin™ IC D5024 (p. 175)

EZ RNA Methylation™ Kit

Use

Rapid Bisulfite Treatment..... ✓
Rapid Column/Plate/Bead Desulphonation..... ✓

Specifications

Input..... Purified RNA
Conversion Efficiency..... > 99%
RNA Recovery.....>80%

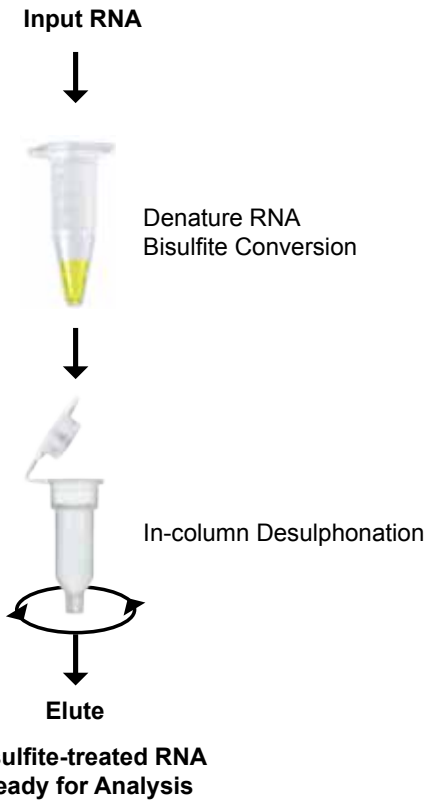
Processing Time..... 50 m.

Highlights

- Fast and reliable bisulfite conversion of RNA for methylation analysis.
- Specifically optimized for complete conversion of non-methylated cytosine in RNA.
- Ideal for all RNA inputs.

Description

The EZ RNA Methylation™ Kit features rapid and reliable bisulfite treatment and conversion of cytosines in RNA for methylation analysis. The kit streamlines the three-step process for complete conversion of cytosine into uracil. RNA denaturation and bisulfite conversion processes are combined into a single step. No buffer preparation is necessary. The RNA Conversion Reagent is provided ready-to-use: simply add the reagent to an RNA sample and incubate as indicated. Also, innovative in-column desulphonation technology eliminates messy precipitation steps, ensuring researchers obtain consistent results. The product has been designed to minimize template degradation, loss of RNA during treatment and clean-up, and to provide complete conversion of cytosine for accurate methylation analysis. Recovered RNA is ideal for RT-PCR, sequencing, library preparation and Next-Gen sequencing.



Available Formats

Zymo-Spin™ IC R5001, R5002 (p. 175)

Product	*Cat. No.*	*Size*
EZ RNA Methylation™ Kit	R5001 R5002	50 preps. 200 preps.

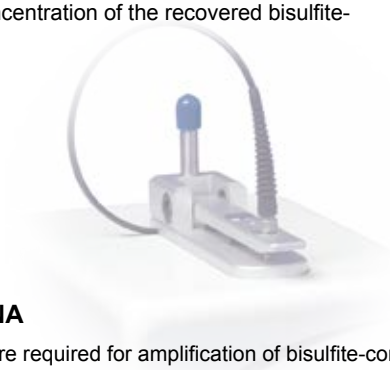
Tips for Bisulfite-treated DNA

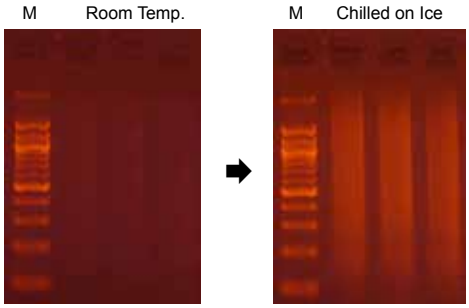
Visualizing Bisulfite-treated DNA

Bisulfite-treated DNA can be visualized in agarose/EtBr gels following electrophoresis using a standard UV-light source. Because the bisulfite-converted DNA is now single stranded and has limited base-pairing at room temperature, it is necessary to cool the gel on ice for 5-10 minutes prior to visualization. This will drive some base pairing between the single-stranded molecules and allow recovered material to be visible.

Quantifying Bisulfite-treated DNA

Following bisulfite-treatment of genomic DNA, non-methylated cytosine residues are converted into uracil. The recovered DNA is typically A, U, and T-rich. The recovered DNA is now single-stranded and the original base-pairing no longer exists. The absorption coefficient at 260 nm will resemble that of RNA, thus a value of 40 ug/mL for A260 = 1.0 should be used when determining the concentration. Use a value of 40 µg/ml for A260 = 1.0 when determining the concentration of the recovered bisulfite-treated DNA.





Visualizing bisulfite-treated DNA in agarose/EtBr gels is best done after chilling the gels on ice. In the figures above, bisulfite-treated salmon sperm DNA was desulphonated then purified. The DNA, mostly single stranded, was then separated in a 0.8 % (w/v) agarose/TAE/EtBr gel and visualized with a UV-light source immediately following electrophoresis (room temp) and after chilling the gel on ice for 15 minutes. M is a 100 bp DNA ladder (Zymo Research).

PCR of Bisulfite Converted DNA

Generally, primers of 26 to 32 bases are required for amplification of bisulfite-converted DNA. In general, all Cs should be treated as Ts for primer design purposes, unless they are in a CpG context. See example below.

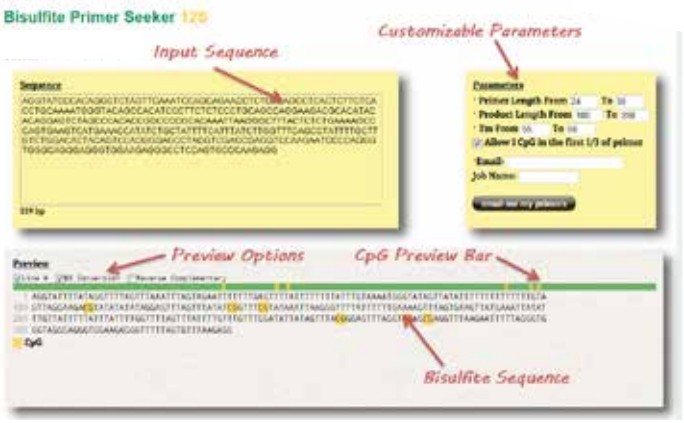
Template:		5' - GACCGTTCCAGGTCCAGCAGTGCGCT - 3'
Bisulfite Converted:		5' - GATCGTTTTAGGTTTAGTAGTGCGTT - 3'
Primers:	Reverse:	3' - ATCATCACRCAA - 5'
	Forward:	5' - GATYGTTTTAGGT - 3'

R = G/A
Y = C/T

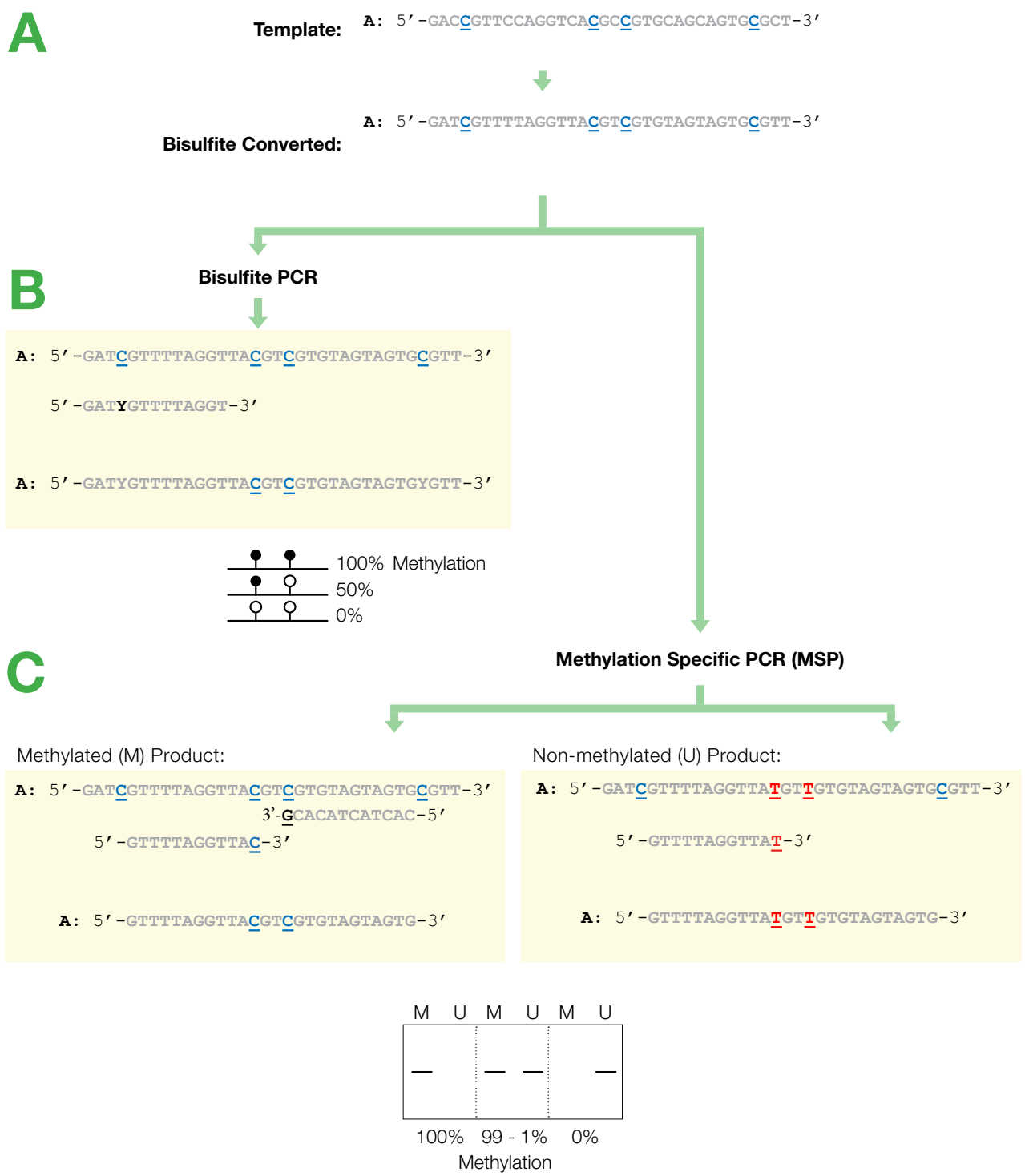
Only the reverse primer binds to the converted DNA, the forward primer will bind the strand generated by the reverse primer. If the primer contains CpG dinucleotides with uncertain methylation status, then mixed bases with C and T can be used. Usually, there should be no more than one mixed position per primer and it should be located toward the 5′ end of the primer. It is not recommended to have mixed bases located at the 3′ end of the primer. Bisulfite Primer Seeker (see image below) is a useful resource when designing primers for bisulfite PCR.

Usually, 35 to 40 cycles are required for successful PCR amplification of bisulfite-converted DNA. Optimal amplicon size is between 150 - 300 bp; however larger amplicons (up to 1 kb) can be generated with optimizing PCR conditions. Annealing temperatures between 55 - 60°C typically work well. As most non-methylated cytosine residues are converted into uracil, the bisulfite-treated DNA is usually AT-rich and has low GC composition. Non-specific PCR amplification is relatively common with bisulfite-treated DNA due to its AT-rich nature. PCR using hot start polymerases (e.g., Zymo*Taq*™ DNA Polymerase, p. 40) is strongly recommended for the amplification of bisulfite-treated DNA.

Bisulfite Primer Seeker is an easy-to-use and versatile tool for bisulfite primer design.
www.zymoresearch.com/tools/bisulfite-primer-seeker



Primer Design for Bisulfite and Methylation Specific PCR



Flowchart of primer design for bisulfite PCR and Methylation Specific PCR (MSP). (A) Following bisulfite treatment, the two converted strands of the DNA template are no longer complementary. (B) Primers for Bisulfite PCR are designed for subsequent sequencing and analysis of cytosines within the amplicon. CpG sites within the primers should be avoided or located at the 5'-end with a mixed base at the cytosine position (Y= C/T, R= G/A). Sequencing data is commonly represented by a "lollipop" plot where closed circles represent methylated cytosine positions and open circles non-methylated ones. (C) Primers for Methylation Specific PCR (MSP) are designed to target and assess the methylation status at specific CpG sites. CpG sites within the primers must be located at the 3'-end to increase their specificity to methylated (M) or non-methylated (U) templates. Completely methylated or non-methylated templates will generate a single amplicon from only their representative primer set following MSP. Samples with mixed methythation, will be amplified by both primer sets.

Frequently Asked Questions

Should the input DNA be dissolved in TE, water, or some other buffer prior to treatment with Zymo Research's bisulfite kits?

Water, TE, or modified TE buffers can be used to dissolve DNA and do not interfere with the conversion process.

Why am I not getting complete conversion of DNA using the EZ DNA Methylation-Direct™ Kit?

1) If sampling solid tissue, then it is most likely that too much sample was processed, resulting in incomplete DNA conversion.
2) If sampling FFPE tissue, then it is probable that the DNA was extensively damaged and/or cross-linked resulting in incomplete DNA conversion.
3) If debris is not removed by centrifugation from the Proteinase K digestion, it may interfere with the bisulfite conversion process resulting in incomplete conversion of the DNA.

Which *Taq* polymerase(s) do you recommend for PCR amplification of bisulfite-converted DNA?

We recommend a "hot-start" DNA polymerase (e.g., Zymo*Taq*™ DNA Polymerase, p. 40).

Why are there two different catalog numbers for the EZ-96 DNA Methylation™ product lines?

The two different catalog numbers are used to differentiate between the binding plates that are included in the kits. Deep and shallow-well binding plates are available to accommodate most rotors and microplate carriers. The table below shows a comparison of the two binding plates. It is recommended to use the deep-well binding plates if possible.

	Silicon-A™	Zymo-Spin™ I-96
Style	Shallow-well	Deep-well
Dimensions of Binding Plate (H x W x L)	19 mm x 83 mm x 125 mm	35 mm x 83 mm x 125 mm
Height of Binding / Collection Plate Assembly	43 mm	60 mm
Binding Capacity / Minimum Elution Volume	5 µg / 30 µl per well	5 µg / 15 µl per well
Cat. No.	D5003, D5007, D5022, D5032	D5004, D5008, D5023, D5033

Are your bisulfite kits compatible with technologies from Illumina®?

Yes. The EZ DNA Methylation™ Kit technologies from Zymo Research are recommended by Illumina® for GoldenGate® and Infinium® Assays.

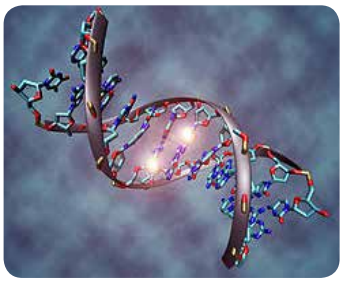
What downstream analytical procedures can be used for DNA bisulfite-converted with the EZ DNA Methylation™ Kits?

DNA converted using any of our EZ DNA Methylation™ kits is ideal for subsequent analysis by canonical sequencing methods, Ms-SNuPE, COBRA, Bisulfite-PCR, MSP, Bisulfite-sequencing, mass spectroscopy (e.g., EpiTYPER® from Sequenom), as well as other methods for analysis.

Human Methylated & Non-methylated DNA Sets

Use

Control for Bisulfite Conversion... ✓
DNA Methylation Quantitation... ✓



Specifications

Format
HCT116 DKO Genomic DNA
Concentration.....250ng/µl

Specifications

Human Methylated and Non-methylated DNA Standard
Format
HCT116 DKO Genomic DNA
Concentration.....250ng/µl

Highlights

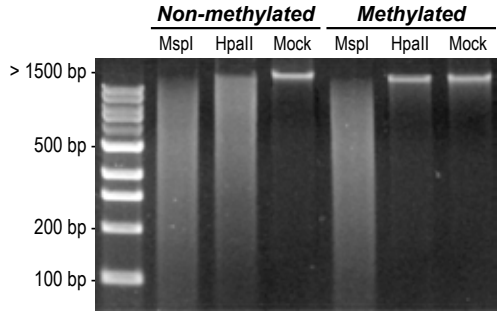
- Purified, non-methylated and methylated human DNA for use as negative and positive control in methylation detection applications.
- Each standard is provided with primer set to amplify a fragment of DNA after bisulfite conversion.

Description

The Human Methylated & Non-methylated DNA Set consists of two control DNAs (a methylated human DNA standard and a non-methylated human DNA standard) together with a set of specifically designed primers that can be used in conjunction with the EZ DNA Methylation™ family of products (p. 13-17) to assess the efficiency of bisulfite-mediated conversion of DNA.

The non-methylated human DNA is purified from the HCT116 DKO (double knock-out) cell line, which contains genetic knockouts of both DNA methyltransferases DNMT1 (-/-) and DNMT3b (-/-). The DNA derived from HCT116 DKO cells has a low level of DNA methylation (< 5%) and therefore can be used as a negative control for DNA methylation analysis (see below). The methylated human DNA standard is purified HCT116 DKO DNA that has been enzymatically methylated at all cytosine positions comprising CG dinucleotides by CpG Methylase (p. 38) and can be used as a positive control for DNA methylation analysis.

The Human WGA Methylated & Non-methylated DNA Set is ideal for studying loci with ultra-low methylation levels. This set is generated from HCT116 DKO DNA using whole-genome amplification (WGA) technology.



An assay for complete methylation by M.SssI methylase. Non-methylated and methylated DNA from HCT116 DKO cells was digested with restriction enzymes MspI and HpaII. MspI digests both non-methylated and methylated DNA. HpaII is sensitive to CpG methylation.

Product	*Cat. No.*	*Size*
Human WGA Methylated & Non-methylated DNA Set	D5013	1 set
Human Methylated & Non-methylated DNA Set	D5014	1 set

Universal Methylated DNA Standards

Highlights

- DNA completely methylated at CpG dinucleotides by CpG Methylase.
- Each standard is provided with primer set to amplify a fragment of DNA after bisulfite conversion.

Description

The Universal Methylated DNA Standards are designed for use as controls to assess the efficiency of bisulfite-mediated conversion of DNA in combination with the EZ DNA Methylation™ family of products (p. 13-17). The control DNAs have been enzymatically modified *in vitro* with CpG Methylase (p. 38), resulting in methylation at all cytosines in the dinucleotide sequence 5′...CpG...3′. The methylated cytosines remain unconverted following bisulfite treatment, whereas non-methylated cytosines are converted into uracils and detected as thymines following PCR. Each primer set has been specifically designed to amplify a fragment of the supplied DNA following bisulfite treatment.

Product	*Cat. No.*	*Size*
Universal Methylated Human DNA Standard	D5011	1 set (5 µg)
Universal Methylated Mouse DNA Standard	D5012	1 set (5 µg)
Bisulfite-converted Universal Methylated Human DNA Standard	D5015	1 set (5 µg)

Use

Control for Bisulfite Conversion... ✓
DNA Methylation Quantitation..... ✓

Specifications

Universal Methylated Human DNA Standard
Format..... Male Genomic DNA
Concentration..... 250 ng/µl

Universal Methylated Mouse DNA Standard
Format..... Male Genomic DNA
Concentration..... 250 ng/µl

Bisulfite-converted Universal Methylated Human DNA Standard
Format.....Bisulfite-converted Male Genomic DNA
Concentration..... 20 ng/µl

E. coli Non-methylated Genomic DNA

Description

This non-methylated genomic DNA is from a Dam⁻ and Dcm⁻ strain (ER2925) of *E. coli*. It is useful for DNA methylation analyses requiring DNA with absolutely no methylation.

ER2925 Genotype: *ara-14 leuB6 fhuA31 lacY1 tsx78 glnV44 galK2 galT22 mcrA dcm-6 hisG4 rfbD1 R(zgb210::Tn10)TetS endA1 rpsL136 dam13::Tn9 xylA-5 mtl-1 thi-1 mcrB1 hsdR2*.

Product	*Cat. No.*	*Size*
E. coli Non-methylated Genomic DNA	D5016	5 µg

Use

Control for Bisulfite Conversion... ✓
DNA Methylation Quantitation..... ✓

Specifications

Format..... *E. coli* Genomic DNA
Concentration..... 250 ng/µl

Methylated & Non-methylated pUC19 DNA Set

Description

The Methylated & Non-methylated pUC19 DNA Set consists of control DNAs and a set of specifically designed primers that can be used to assess bisulfite conversion efficiency or to produce known mixtures of methylated and non-methylated DNA for assay calibration.

The Non-methylated pUC19 DNA is pUC19 isolated from a methylation-negative strain of bacteria (Dam⁻, Dcm⁻) and the methylated pUC19 DNA is pUC19 enzymatically methylated at all cytosines in the dinucleotide sequence 5′...CpG...3′ by CpG Methylase (p. 38).

Product	*Cat. No.*	*Size*
Methylated & Non-methylated pUC19 DNA Set	D5017	1 set (20 ng ea.)

Use

Control for Bisulfite Conversion... ✓
DNA Methylation Quantitation..... ✓

Specifications

Format..... Linearized Plasmid
Concentration..... 1 ng/µl

5-mC DNA ELISA Kit

Use

Global 5-mC Detection and Quantitation. ..... ✓

Specifications

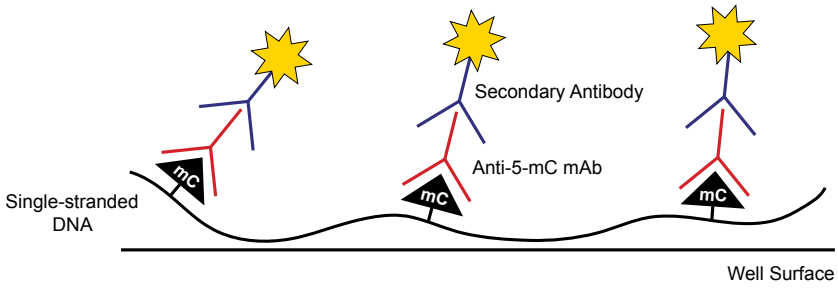
DNA Input..... 10-200 ng
Detection.....≥0.5% 5-mC per 100 ng
Assay Time..... 3-4 hr.

Highlights

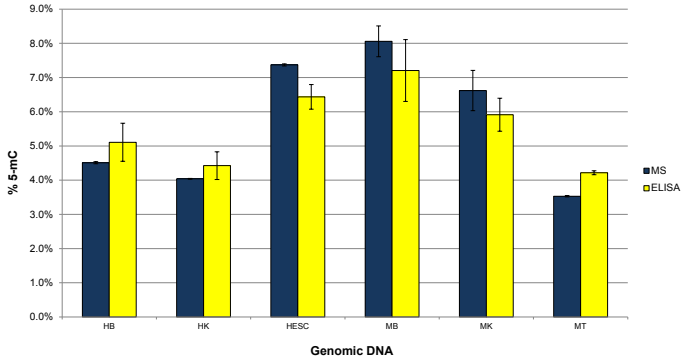
- For high-throughput, detection of global 5-methylcytosine (5-mC) in DNA.
- The streamlined workflow can be completed in less than 3 hours.

Description

The 5-mC DNA ELISA Kit is a convenient and powerful tool that allows the researcher to accurately quantitate 5-mC in any DNA sample in less than 3 hours. The kit features a unique Anti-5-Methylcytosine monoclonal antibody (see pg. 25) that is both sensitive and specific for 5-mC. The assay is compatible with a wide range of input DNA from vertebrate, plant, and microbial sources as well as fragmented DNA. Percent 5-mC in a DNA sample can be accurately quantified from a standard curve generated with specially designed controls included with the kit. Also, the fast, streamlined workflow is ideal for high-throughput analyses.



The 5-mC DNA ELISA Kit utilizes the indirect ELISA technique in its workflow. Denatured, single-stranded DNA samples are coated on the well surfaces in 5-mC Coating Buffer. Anti-5-Methylcytosine monoclonal antibody (Anti-5-mC mAb) and the HRP-conjugated Secondary Antibody are prepared in 5-mC ELISA Buffer and added to the wells. Detection of 5-mC occurs after addition of the HRP Developer.



The 5-mC DNA ELISA Kit can quantify 5-mC in numerous DNA samples with close correlation to LC-MS/MSMRM analysis. 100 ng of genomic DNA from human brain (HB), human kidney (HK), human embryonic stem cell (HESC), mouse brain (MB), mouse kidney (MK), mouse testes (MT) was analyzed.

Product	*Cat. No.*	*Size*
5-mC DNA ELISA Kit	D5325 D5326	1 x 96 rxns. 2 x 96 rxns.

Anti-5-Methylcytosine Monoclonal Antibody (Clone 10G4)

Highlights

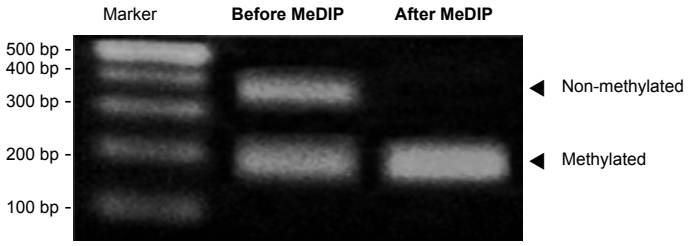
- Specifically binds to 5-methylcytosine in ssDNA context.
- No detectable cross reactivity with non-methylated cytosine.

Description

The mouse Anti-5-Methylcytosine Monoclonal Antibody (Clone 10G4) has been developed to facilitate differentiation between methylated and non-methylated cytosines in DNA. Specificity of this clone is to 5-methylcytosines in single-stranded DNA with no detectable cross reactivity to non-methylated cytosines. The antibody has proven to be a valuable tool in the characterization of DNA methylation and has been successfully used for immunoprecipitation-based assays such as Methylated DNA Immunoprecipitation (MeDIP), see the following page.

Application		Recommended Dilution
ELISA	Yes	≥ 1:4,000
Immunoblotting	Yes	≥ 1:5,000
Immunofluorescence	Yes	N/A*
Immunoprecipitation (IP) of Methylated DNA	Yes	2 - 4 µg per IP

*N/A = Data Not Available



Methylated DNA is efficiently enriched using the 5-Methylcytosine Monoclonal Antibody. DNA was immunoprecipitated using the mouse Anti-5-Methylcytosine 10G4 Antibody from a mixed methylated/non-methylated DNA population. Methylated DNA can be cut with NcoI whereas non-methylated DNA is resistant to NcoI digestion. The DNA (post-IP) was subsequently amplified by PCR and digested with NcoI. Products were then separated in a 2.0% (w/v) agarose/TAE/EtBr gel. The image above demonstrates specific enrichment of methylated versus non-methylated DNA by the Anti-5-Methylcytosine 10G4 Antibody.

Product	*Cat. No.*	*Size*
Anti-5-Methylcytosine Antibody (clone 10G4)	A3001-15	15 µg/15 µl
	A3001-30	30 µg/30 µl
	A3001-50	50 µg/50 µl
	A3001-200	200 µg/200 µl

Use

Immunoprecipitation of Methylated DNA..... ✓
ELISA..... ✓
Immunoblotting..... ✓
Immunofluorescence..... ✓

Specifications

Isotype.....IgG1
Concentration..... 1 mg/ml
Buffer.....PBS (pH 7.4)
0.01% Thimerosal
Short Term Storage..... 4°C
Long Term Storage..... - 80°C

Methylated-DNA IP Kit

Use

Immunoprecipitation of Methylated DNA..... ✓
Purification of Methylated DNA..... ✓

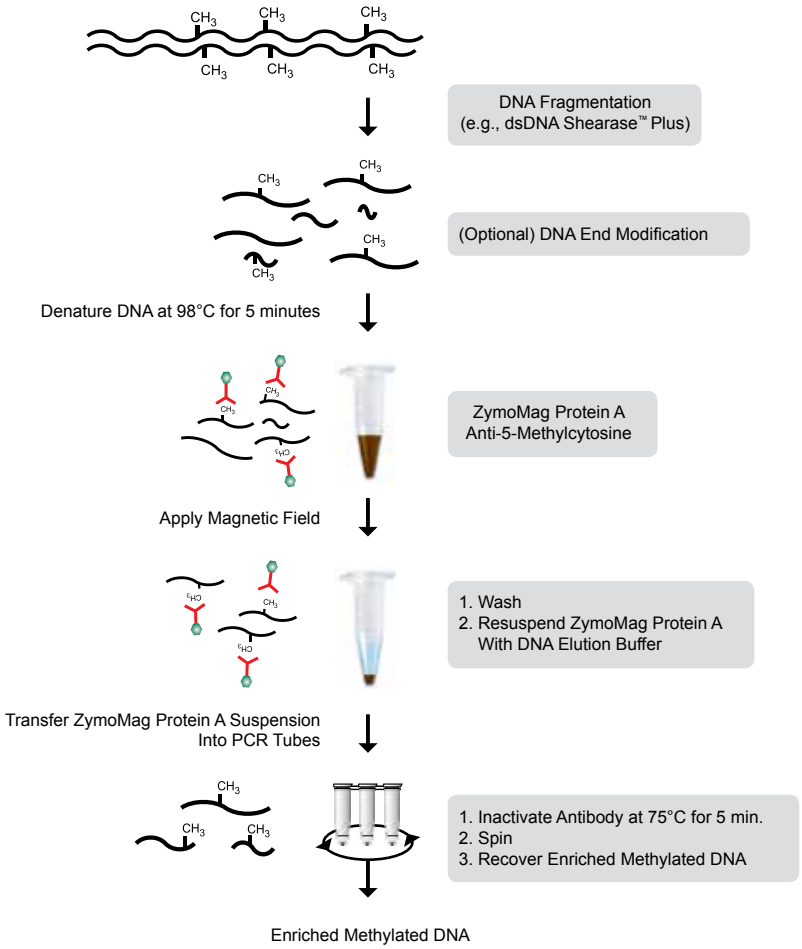
Specifications

Format..... Magnetic Beads
Optimal DNA Input..... 50 - 500 ng
Elution Volume..... 10 µl
Enrichment Factor..... > 100 fold
Processing Time..... 4 hr.

- Methylated DNA enrichment for large-scale DNA methylation analysis.
- Includes a highly specific anti-5-methylcytosine monoclonal antibody for defined, reproducible results
- Eluted, ultra-pure DNA is ideal for use in subsequent molecular based analyses (e.g., assembling genomic libraries and determining genome-wide methylation status).

Description

The Methylated-DNA IP Kit features immunoprecipitation technology for the enrichment of 5-methylcytosine-containing DNA from any pool of fragmented genomic DNA for use in genome-wide methylation analysis. The kit features a highly specific Anti-5-Methylcytosine Monoclonal Antibody (p. 25) for the capture and separation of methylated DNA from nonmethylated DNA in only a few hours (see figure below). Typically, over a hundred-fold enrichment of methylated DNA vs. non-methylated DNA can be achieved with the use of this kit. Recovered DNA is suitable for many downstream applications to analyze genome-wide DNA methylation including PCR, bisulfite treatment, whole-genome amplification, ultra-deep sequencing, and microarray. The product is provided with control DNA and primers.



Product	*Cat. No.*	*Size*
Methylated-DNA IP Kit	D5101	10 Rxns

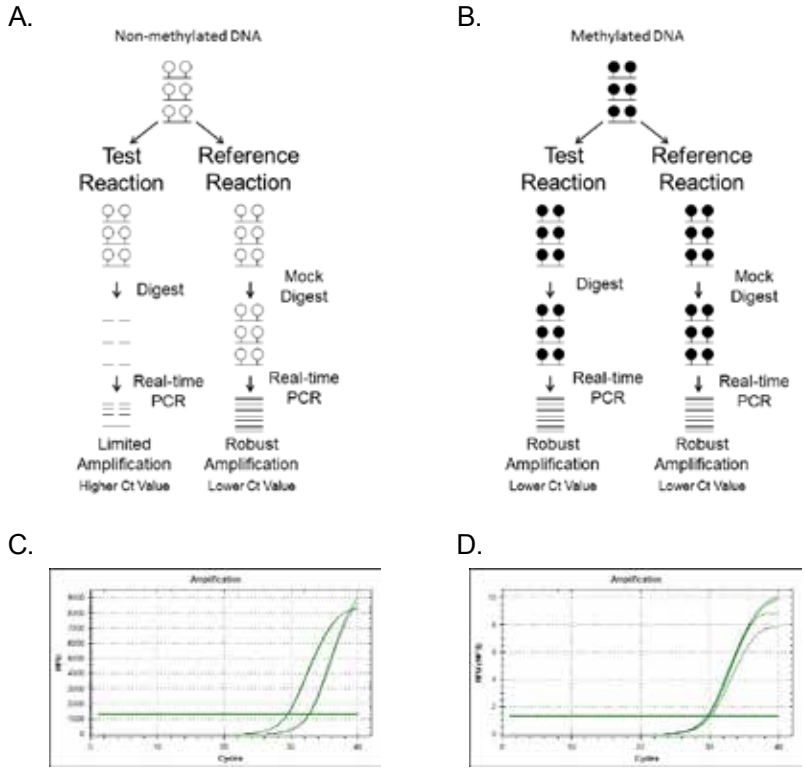
OneStep™ qMethyl™ Kits

- Single step, bisulfite-free DNA methylation analysis.
- Includes reagents and controls for quantitative detection and reliable performance.
- Ideal for rapid screening of single- and multi-locus DNA methylation.

Description

The *OneStep*™ qMethyl™ Kit from Zymo Research provides a simple, straightforward, and bisulfite-free procedure for rapid, locus-specific DNA methylation assessment via the selective amplification of a methylated region of DNA.

This is accomplished by splitting any DNA to be tested into two parts: a "Test Reaction" and a "Reference Reaction" (see figure below). DNA in the Test Reaction is digested with Methylation Sensitive Restriction Enzymes (MSREs) while DNA in the Reference Reaction is not. The DNA from both samples is then amplified using real-time PCR in the presence of SYTO®9 fluorescent dye and then quantitated. The "Lite" version allows real-time PCR to be performed with other fluorescent dyes or molecular probes of the researcher's choosing.



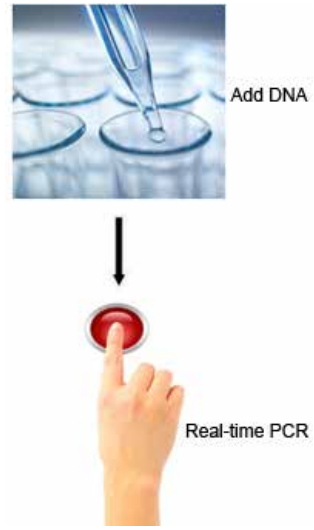
Rapid bisulfite-free methylation analysis is efficiently performed using the *OneStep*™ qMethyl™ Kit. Schematics A and B (above) illustrate the sample workflow of Non-methylated DNA and Methylated DNAs. Test Reaction samples are MSRE digested while the Reference Reaction samples are not (mock digested). Following digestion, DNA from both samples is used for real-time PCR. The white lollipops in the image represent unmethylated cytosines and black lollipops methylated cytosines in CpG dinucleotide context. Following real-time PCR, amplification plots (C and D) demonstrate non-methylated DNA exhibits large differences in the Ct values for Test and Reference Reactions (C) while highly methylated DNA samples exhibit little difference (D).

Product	*Cat. No.*	*Size*
OneStep™ qMethyl™ Kit	D5310	1 x 96 well
OneStep™ qMethyl™-Lite	D5311	1 x 96 well

Use

Bisulfite-free DNA Methylation Analysis..... ✓

Rapid Screening of Multiple Loci or Single Locus Across Multiple Samples..... ✓



Specifications

Format..... 96-Well Plate
Detection Dye..... SYTO® 9
DNA Input..... 20 ng in 5 µl
Thermocycler Compatibility:
Roche® LightCycler 480
Bio-Rad CFX96™
ABI 7500 or similar
Processing Time..... ~4 hours

Pico Methyl-Seq™ Library Prep Kit

Use

Post-Bisulfite
Library Preparation..... ✓

Specifications

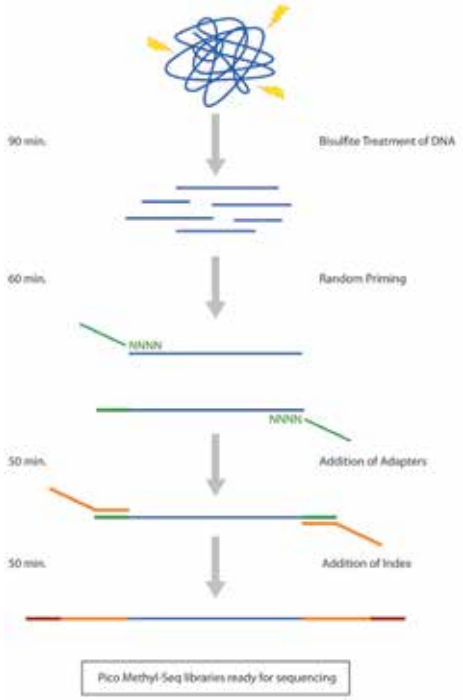
DNA Input..... 10 pg-100 ng
DNA Samples.....Genomic DNA
FFPE DNA
Sequencing Platform Compatibility:
Illumina's TruSeq chemistries for HiSeq™ and MiSeq™ sequencing platforms.

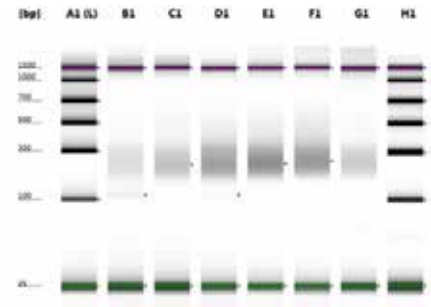
Highlights

- Post-bisulfite library preparation for Whole Genome Bisulfite Sequencing (WGBS).
- Accommodates ultra-low DNA input and compatible with FFPE samples.
- Simple, ligation- and gel-free workflow can be completed in a few hours.

Description

The Pico Methyl-Seq™ Library Prep Kit provides a streamlined workflow for making WGBS libraries. Input DNA is randomly fragmented during the initial bisulfite treatment step followed by three rounds of amplification with uniquely designed primers. The procedure can accommodate as little as 10 pg input DNA (including that derived from FFPE samples), making it ideal for methylation analysis of precious, limited, and target-enriched samples.

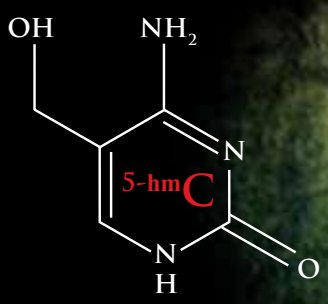




Agilent 2200 TapeStation D1K gel of libraries prepared (from B1-G1) using 10 pg, 20 pg, 100 pg, 1 ng, 10 ng, and 100 ng, respectively.

Product	*Cat. No.*	*Size*
Pico Methyl-Seq™ Library Prep Kit	D5455 D5456	10 preps. 25 preps.

Decode the Mystery of the Sixth Base

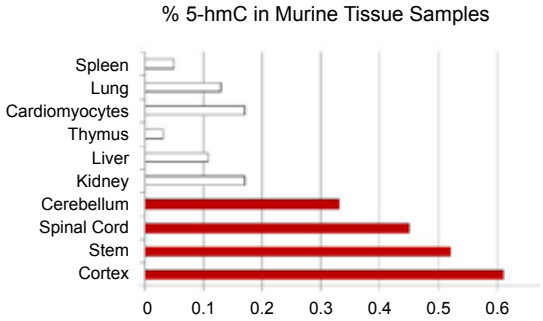


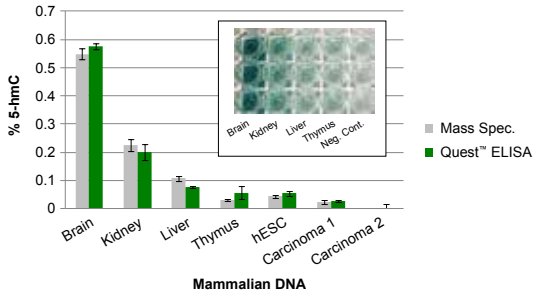
5-Hydroxymethylcytosine

Heralded as the 'sixth base', **5-hydroxymethylcytosine (5-hmC)** in DNA represents the newest frontier in the study of heritable epigenetic markers. Its physiological role has yet to be defined, but its putative role in transcriptional regulation has been implicated as well as its involvement in oxidative demethylation, cell and tissue differentiation, and more.

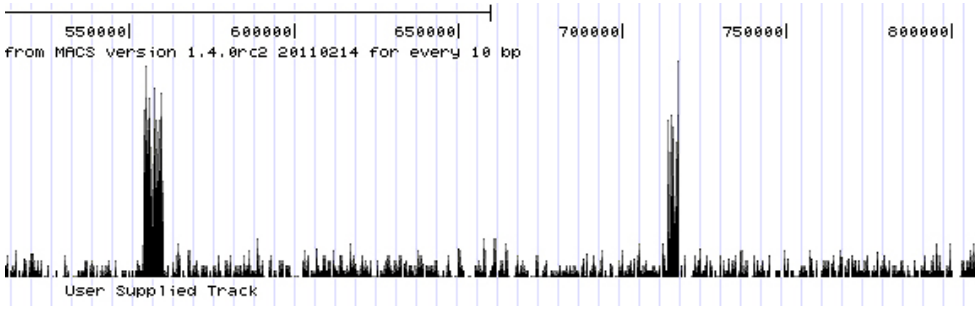
Got 5-hmC on the brain?

Here's why you should ... 5-hmC levels are highest in brain tissue. While this epigenetic mark can be found in nearly all mammalian tissues, its highest levels are consistently observed in the brain and the greater central nervous system.





5-hmC Quantification. Percent 5-hmC in mammalian DNA samples can be determined by mass spectrometry or Quest 5-hmC™ ELISA Kit (p. 31). Inlaid image represents relative amounts of 5-hmC in triplicate genomic DNA samples.

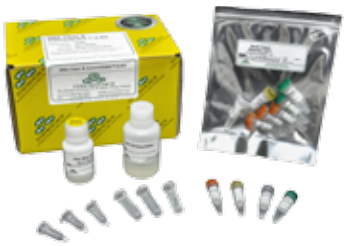


Enrichment of 5-hmC from human brain DNA followed by Next-Gen sequencing show the distribution of 5-hmC in genome-wide context. The distribution of 5-hmC is readily discernible by the two prominent peaks in the region shown above. *The physiological significance of 5-hmC is under intense investigation.*

Quest 5-hmC™ Detection Kits

Use

Sequence Specific 5-hmC Detection..... ✓



Compatible GSRE

Enzyme	Recognition Sequence
MspI*	CCGG
Csp6I	GTAC
HaeIII	GGCC
TaqαI	TCGA
MboI	GATC
McrBC	$R^mC(N_{40\text{-}3000})R^mC$

*included

Available Format

Zymo-Spin™ IC D5410, D5411, D5415, 5416 (p. 175)

Highlights

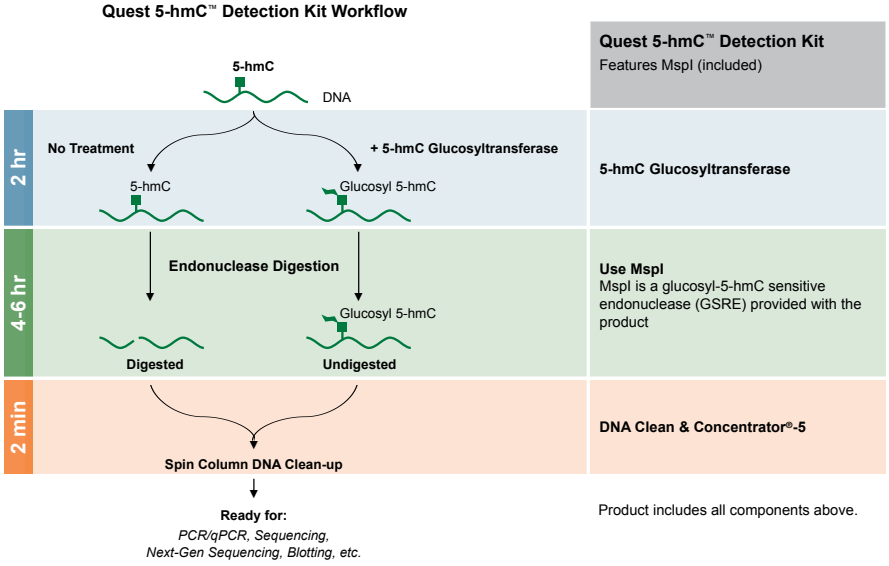
- Method to distinguish 5-hydroxymethylcytosine in sequence- and locus-specific context within DNA.
- Convenient and reliable single tube reaction format.
- DNA is eluted in water or low salt buffer and is suitable for analysis by a variety of downstream applications.

Description

The Quest 5-hmC™ Detection Kit from Zymo Research allows for sequence specific detection of 5-hydroxymethylcytosine (5-hmC) within DNA using a simple and efficient reaction setup. Utilizing a robust and highly specific 5-hmC Glucosyltransferase enzyme, 5-hmC in DNA is specifically tagged with a glucose moiety yielding a modified base, glucosyl-5-hydroxymethylcytosine (g-5-hmC).

After glucosylation of 5-hmC, digestion of DNA with g-5-hmC sensitive restriction endonucleases (GSREs) allow differentiation of 5-methylcytosine from 5-hmC according to the context of a GSRE's recognition sequence. GSREs can efficiently digest DNA when cytosine, 5-methylcytosine, or 5-hydroxymethylcytosine is within their recognition sequence. However, if 5-hmC is glucosylated (i.e., g-5-hmC), GSREs can no longer digest the DNA. Therefore, by exploiting this sensitivity to g-5-hmC, effective detection of 5-hmC can be achieved by a number of downstream applications (e.g. qPCR, Next-Gen sequencing, Southern blotting, microarray, etc.).

Quest 5-hmC™ Detection Kit Workflow



Product	*Cat. No.*	*Size*
Quest 5-hmC™ Detection Kit (Includes MspI GSRE)	D5410 D5411	25 preps. 50 preps.
Quest 5-hmC™ Detection Kit -Lite (GSRE not included)	D5415 D5416	25 preps. 50 preps.

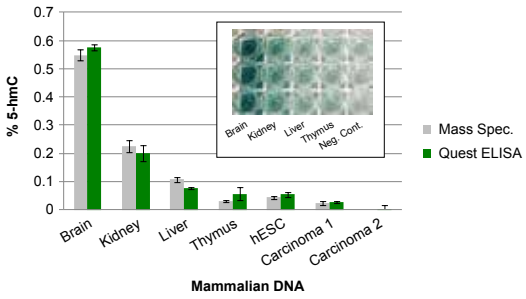
Quest 5-hmC™ DNA ELISA Kit

Highlights

- Sensitive and specific quantitation of 5-hydroxymethylcytosine (5-hmC) DNA from a variety of samples.
- Ideal for global 5-hmC detection, tissue-specific 5-hmC quantitation, high-throughput compound screening, and more.
- Streamlined workflow can be completed in as little as 3 hours.

Description

The Quest 5-hmC™ DNA ELISA Kit is both sensitive and specific and can be used to accurately detect 5-hmC DNA in a variety of samples. The kit is compatible with a wide range of input DNA including intact genomic DNA, as well as enzyme-digested and mechanically sheared fragments. The Control DNA Set included with this kit has been calibrated to accurately quantify the percent 5-hmC in sample DNA by use of a standard curve. The fast, streamlined workflow is ideal when analyzing/screening large numbers of samples.



5-hmC Quantification. Percent 5-hmC in mammalian DNA samples quantified by mass spectrometry or Quest 5-hmC™ ELISA Kit. Inlaid image represents relative amounts of 5-hmC in triplicate gDNA samples.

Product	*Cat. No.*	*Size*
Quest 5-hmC™ DNA ELISA Kit	D5425 D5426	1 x 96 rxns. 2 x 96 rxns.

Use

Global 5-hmC Detection and Quantitation..... ✓

Specifications

DNA Input..... 25-200 ng
Detection..... ≥ 0.02% 5-hmC per 100 ng
Assay Time..... 3-4 hr.

Anti-5-hmC Polyclonal Antibody

Highlights

- Low cross reactivity with cytosine and 5-methylcytosine versus other available antibodies.
- High sensitivity to low levels of 5-hydroxymethylcytosine DNA.

Description

The rabbit Anti-5-hmC polyclonal antibody has been developed in order to robustly distinguish between hydroxymethylated DNA and methylated or unmodified DNA. Specificity of the antibody is enhanced such that cross-reactivity with unmodified and methylated templates is suppressed to near-background levels. The antibody has been extensively tested and validated in ELISA and immunoprecipitation-based enrichment assays, and is suitable for use in further applications including immunohistochemical labeling and chromatographic blotting.

Product	*Cat. No.*	*Size*
Anti-5-Hydroxymethylcytosine Polyclonal Antibody	A4001-25 A4001-50 A4001-200	25 µg/25 µl 50 µg/50 µl 200 µg/200 µl

Use

Immunoprecipitation..... ✓
ELISA..... ✓
Immunoblotting..... ✓
Immunofluorescence..... ✓

Specifications

Source..... Rabbit
Isotype..... IgG1
Concentration..... 1 mg/ml
Buffer..... PBS at pH 7.5.
Storage..... -20 °C

Quest 5-hmC™ Enrichment Kit

Use

5-hmC DNA Enrichment..... ✓

Specifications

DNA Input..... 5-4,000 ng
Processing Time..... ~3 hr.

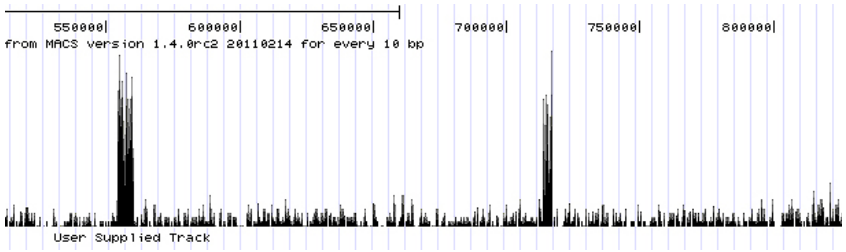
Highlights

- Clean and uniform enrichment of 5-hmC DNA by J-Binding Protein (JBP).
- Simple three-step workflow.
- Enriched DNA is ideal for PCR, qPCR, Next-Gen sequencing, arrays, and more.

Description

While the importance of DNA methylation in epigenetic regulation is well established, the biological role of hydroxymethylation remains elusive. The "sixth base", 5-hydroxymethylcytosine (5-hmC), has been detected in the DNA of embryonic stem cells and other cell types. Brain tissue DNA contains the highest levels of 5-hmC. Recent work suggests that 5-hmC may function in gene regulation and may be involved as an intermediate in active demethylation of 5-methylcytosine (5-mC). The Quest 5-hmC™ DNA Enrichment Kit features J-Binding Protein (JBP) for the specific enrichment of 5-hmC containing DNA. The consolidated workflow makes the procedure reliable for robust analysis of multiple samples. Simply glucosylate the input DNA, add JBP Capture MagBeads, then wash and elute the enriched 5-hmC DNA.

Schematic Overview of The Quest 5-hmC™ DNA Enrichment Kit Workflow



Enrichment of 5-hmC from human brain DNA followed by Next-Gen sequencing show the distribution of 5-hmC in genome-wide context. The distribution of 5-hmC is readily discernible by the two prominent peaks in the region shown above. This enrichment procedure is featured in an Epigenetic Service offered by Zymo Research (p. 46).

Product	*Cat. No.*	*Size*
Quest 5-hmC™ DNA Enrichment Kit	D5420 D5421	25 rxns. 50 rxns.

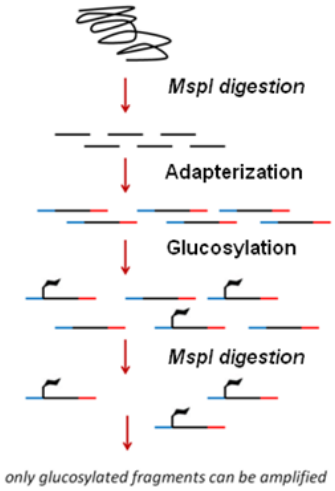
RRHP 5-hmC Library Prep Kit

Highlights

- Clean and uniform enrichment of 5-hmC DNA by J-Binding Protein (JBP).
- Simple three-step workflow.
- Enriched DNA is ideal for PCR, qPCR, Next-Gen sequencing, arrays, and more.

Description

While the importance of DNA methylation in epigenetic regulation is well established, the biological role of hydroxymethylation remains elusive. The "sixth base", 5-hydroxymethylcytosine (5-hmC), has been detected in the DNA of embryonic stem cells and other cell types. Brain tissue DNA contains the highest levels of 5-hmC. Recent work suggests that 5-hmC may function in gene regulation and may be involved as an intermediate in active demethylation of 5-methylcytosine (5-mC). The Quest 5-hmC™ DNA Enrichment Kit features J-Binding Protein (JBP) for the specific enrichment of 5-hmC containing DNA. The consolidated workflow makes the procedure reliable for robust analysis of multiple samples. Simply glucosylate the input DNA, add JBP Capture MagBeads, then wash and elute the enriched 5-hmC DNA.



Use

5-hmC DNA Enrichment..... ✓

Specifications

DNA Input..... 5-4,000 ng
Processing Time..... ~3 hr.

Product	*Cat. No.*	*Size*
RRHP 5-hmC Library Prep Kit	D5450 D5451	12 preps. 25 preps.

Matched DNA Sets

Use

Control for Bisulfite Conversion... ✓
DNA Methylation Quantitation... ✓

Specifications

Human Matched DNA Set
Source..... Human Male
Concentration.....250ng/µl

Mouse 5-hmC & 5-mC DNA Set
Source..... Swiss Webster mice
Concentration.....250ng/µl

Highlights

- Matched DNA set of genomic DNA from multiple organs.
- Precisely quantified levels of 5-methylcytosine & 5-hydroxymethylcytosine via LC/MS.
- Useful control for detection methods of 5-methylcytosine or 5-hydroxymethylcytosine.

Description

Matched DNA Sets are an ideal control for detection and/or quantification methods against 5-methylcytosine (5-mC) and 5-hydroxymethylcytosine (5-hmC) as both modified cytosines are present at physiologically relevant levels and loci.

The **Human Matched DNA Set** is a set of organ specific human genomic DNAs originating from a single individual. The **Mouse 5-hmC & 5-mC DNA Set** is a set of organ specific mouse genomic DNAs isolated from a pool of 8-10 week old Swiss Webster mice. The levels of 5-methylcytosine and 5-hydroxymethylcytosine have been precisely quantified by mass spectrometry (LC/MS). Percentages of each modified cytosine are listed below.

Human Matched DNA Set

	Brain	Spleen
^{5m}C %	6.93%	6.75%
^{5hm}C %	1.89%	.018%

Mouse 5-hmC & 5-mC DNA Set

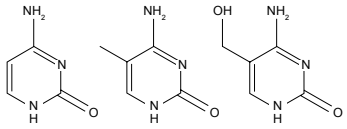
	Brain	Spleen	Liver	Thymus
^{5m}C %	8.06	6.62	7.13	7.54
^{5hm}C %	0.548	0.225	0.107	0.030

Product	*Cat. No.*	*Size*
Human Matched DNA Set	D5018	1 set
Mouse 5hmC & 5mC DNA Set	D5019	1 set

5-mC & 5-hmC DNA Standard Set

Use

Cytosine modification studies
(i.e., 5-mC & 5-hmC)..... ✓



C **^{5m}C** **^{5hm}C**

Specifications

DNA Amount.....2µg each
DNA Concentrations...50ng/µl each

Highlights

- Control DNA for 5-methylcytosine (5-mC) and 5-hydroxymethylcytosine (5-hmC) quantitation applications (i.e. - mass spectrometry, HPLC, TLC, etc.).
- Substrate for studies involving 5-hmC interacting proteins.

Description

The 5-mC & 5-hmC DNA Standard Set is a set of three DNA standards that are linear dsDNA, 897 bp, and have the same sequence. The only difference is that each contains either 100% unmodified cytosines, 5-methylcytosines, or 5-hydroxymethylcytosines. Since the sequence and extent of cytosine modification is known, this DNA standard set is ideal for use in calibration of various applications intended for quantitation of cytosine modifications.

Product	*Cat. No.*	*Size*
5-mC & 5-hmC DNA Standard Set	D5405	1 set

EZ Nucleosomal DNA Prep Kit

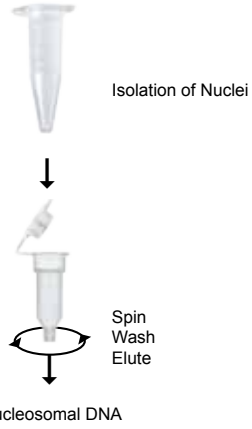
Highlights

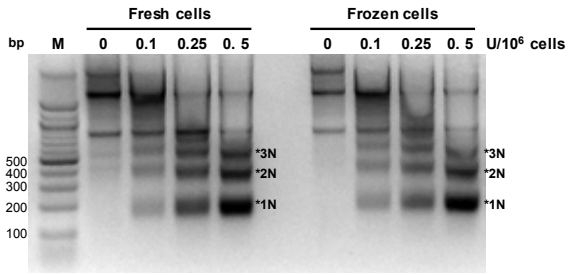
- For the isolation of nucleosome-associated DNA from fresh or frozen cells.
- Ideal for use in nucleosome mapping studies.
- Contains a newly developed enzyme - Atlantis dsDNase that replaces conventional micrococcal nuclease for nucleosomal DNA preparation.
- Atlantis dsDNase digestion yields homogenous populations of core nucleosomes.

Description

The EZ Nucleosomal DNA Prep Kit is a streamlined procedure for the isolation of nucleosome-associated DNA. The kit includes reagents/procedures for cell nuclei isolation, intact nuclei enzymatic digestion, and nucleosomal DNA purification. This kit includes two different enzymes for nucleosomal DNA preparation: Atlantis dsDNase and Micrococcal Nuclease (see p.162 and 164).

Atlantis dsDNase is a double-strand DNA specific endonuclease that cleaves phosphodiester bonds in DNA to yield oligonucleotides with 5'-phosphate and 3'-hydroxyl termini. Atlantis dsDNase digestion yields very homogeneous populations of core nucleosomes and purification of the nucleosome-associated DNA is performed using Zymo Research's proven Zymo-Spin™ column technology. The result is pure nucleosomal DNA ready for analysis in less than 45 minutes!





Mammalian Nucleosomal DNA Preparation: Mammalian nuclei prepared as indicated by the Mammalian Nuclei Prep Protocol was treated with 0.1 U, 0.25 U, and 0.5 U (unit) Atlantis dsDNase for the 20 min at 42°C. DNA was subsequently resolved in a 2% agarose gel. M is a 100 bp DNA ladder (Zymo Research). Asterisks (1N, 2N, 3N) represent mono-, di-, and tri-nucleosomal DNAs, respectively

Product	*Cat. No.*	*Size*
EZ Nucleosomal DNA Prep Kit	D5220	20 preps.

Use

Mammalian Cells..... ✓
Yeast..... ✓
Nuclei..... ✓

Specifications

Enzyme Concentration..... 0.1 U/µl
Storage..... -20°C
Inactivation..... 5X MN Stop Buffer
Standard Reaction Time.... 45 min.

Featured Technology

Atlantis dsDNase (p. 162)
Micrococcal Nuclease (p. 164)

Available Format

Zymo-Spin™ IIC D5220 (p. 176)

Zymo-Spin™ ChIP Kit

Use

Chromatin Immunoprecipitation (ChIP)..... ✓

Specifications

Sample Source:
Mammalian Cells

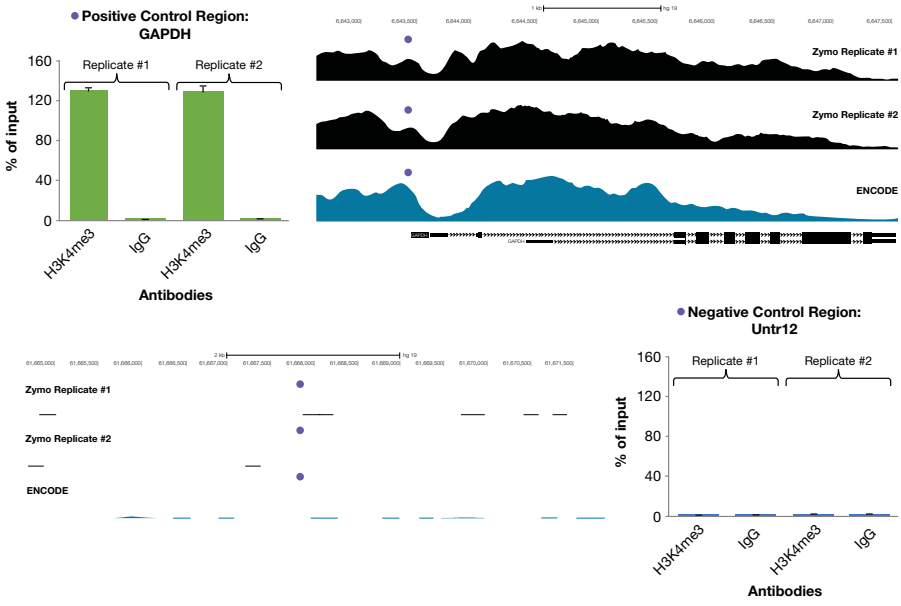
Highlights

- Unique workflow features a micro-elution (≥6 µl) spin column for purification of ChIP DNA.
- High quality ChIP DNA is ideal for ChIP-qPCR, ChIP-Seq, and other molecular applications.

Description

Chromatin immunoprecipitation (ChIP) is the prevailing method used for the study of protein-DNA interactions and the dynamics of epigenetic modifications. ChIP facilitates the identification of regions of the genome associated with a specific protein. The Zymo-Spin™ ChIP Kit from Zymo Research provides a streamlined ChIP procedure for investigating protein-DNA interactions that have been "fixed" in their natural state and can be used to effectively identify binding sites for transcription factors, co-factors, and other DNA regulatory proteins.

Briefly, this ChIP protocol involves covalent cross-linking of protein-DNA complexes with formaldehyde followed by cell lysis and chromatin shearing. A ChIP-grade antibody (user supplied) is used with Protein A magnetic beads to immunoprecipitate the protein-DNA complexes of interest. Following reverse crosslinking, RNase A and Proteinase K treatments, the DNA is eluted in a minimal volume of buffer using a unique micro-elution spin column, eliminating the need for messy precipitations. The protocol has been optimized for efficient crosslinking, shearing, and immunoprecipitation regardless of the mammalian cell type. Additionally, eluted ChIP DNA is ideal for end point PCR, quantitative PCR, ChIP-Seq library preparation, and Next-Gen sequencing-based applications.



ENCODE Quality ChIP-Seq Services. Data from Zymo Research's optimized ChIP-Seq protocol overlap the same regions identified by the ENCODE project and were validated by qPCR.

Available Format

Zymo-Spin™ IC D5209, D5210 (p. 175)

Product	*Cat. No.*	*Size*
Zymo-Spin™ ChIP Kit	D5209 D5210	10 preps. 25 preps.

ChIP DNA Clean & Concentrator® Kits

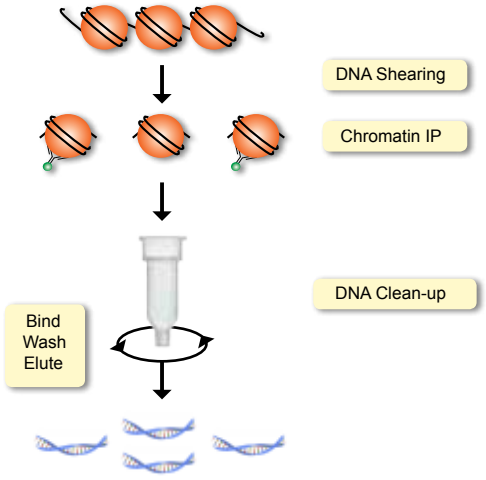
Highlights

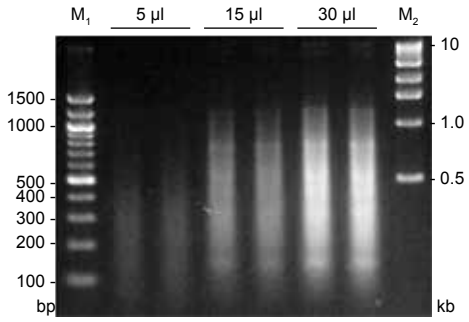
- Two (2) minute DNA clean-up from any step in a standard ChIP protocol.
- DNA is ideal for PCR, arrays, DNA quantification, Southern blot analysis, sequencing, and other molecular applications.

Description

The ChIP DNA Clean & Concentrator® and ZR-96 ChIP DNA Clean & Concentrator® provide hassle-free methods for the rapid purification and concentration of high quality DNA from any step in a standard chromatin immunoprecipitation (ChIP) protocol. This includes samples that have undergone reverse cross-linking, Proteinase K or RNase A digestion, mechanical or nuclease-mediated DNA shearing, and samples eluted from chromatin-antibody-bead complexes. The specially formulated ChIP DNA Binding Buffer promotes DNA adsorption to the column in the presence of detergents, antibodies, and proteinases that are often used for ChIP. The ChIP DNA Clean & Concentrator® also removes TES, 0.1M NaHCO3 and 1% SDS from DNA eluted from chromatin-antibody-bead complexes.

Overview of ChIP DNA Clean & Concentrator® Procedure





Agarose gel electrophoresis of DNA isolated from cell lysates. High quality DNA can be efficiently recovered from *Saccharomyces cerevisiae* cell lysates using the ChIP DNA Clean & Concentrator®. Duplicate purifications were performed with 5, 15, and 30 µl cell lysate and an equal volume of eluted DNA was loaded into each lane. The size marker M^1 and M_2 are 100 bp and 1 kb ladders, respectively (Zymo Research).

Product	*Cat. No.*	*Size*
ChIP DNA Clean & Concentrator® (uncapped)	D5201	50 preps.
ChIP DNA Clean & Concentrator® (capped)	D5205	50 preps.
ZR-96 ChIP DNA Clean & Concentrator®	D5206 D5207	2 x 96 preps. 4 x 96 preps.

Use

DNA Purification from any ChIP... ✓

Protein, Salt, and Detergent Removal..... ✓

Specifications

DNA Size Limits.....50 bp - 23 kb
DNA Recovery
50 bp - 10 kb..... 70 - 90%
> 10 kb..... 70%
Detergent Tolerance:
≤ 5% Triton X-100,≤ 5% Tween-20,
≤ 5% Sarkosyl, ≤ 1% SDS,
and others.
Binding Capacity.....5µg/prep.

ChIP DNA Clean & Concentrator®
Format.....Spin Column
Elution Volume.....≥6 µl
Processing Time.....2 min.

ZR-96 ChIP DNA Clean & Concentrator®
Format..... 96-Well
Elution Volume.....≥10 µl
Processing Time.....15 min.

Available Formats

Zymo-Spin™ I D5201 (p. 175)

Zymo-Spin™ IC D5205 (p. 175)

Zymo-Spin™ I-96 D5206, D5207 (p. 182)

CpG Methylase (M.SssI)

Use

In vitro Methylation of DNA..... ✓

CpGpCpG

Specifications

Enzyme Concentration..... 4 U/µl
Storage.....-20°C
Inactivation..... 65°C for 20 min.
Standard Reaction Time..... 2 hr.

Unit Definition

One unit (U) is defined as the amount of enzyme required to protect 1 µg of λ DNA against cleavage by BstUI restriction endonuclease in a total reaction volume of 20 µl for 1 hour at 37°C.

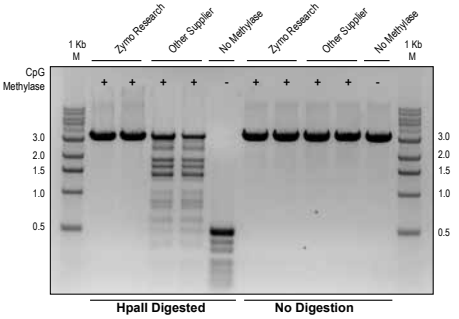
Highlights

- For complete, *in vitro* methylation of DNA for methylation analysis.
- Methylation of chromatin DNA for DNA accessibility studies.
- Inhibition of endonucleases with overlapping CpG sequence recognition.
- [^{3}H]-labeling of DNA.

Description

The CpG Methylase from Zymo Research completely methylates all cytosines (C^5) in double-stranded, non-methylated and hemimethylated DNA having the dinucleotide sequence 5′…CpG…3′. The recombinant methylase is isolated from an *E. coli* strain that expresses the methyltransferase gene from *Spiroplasma sp.* strain MQ1. Reaction conditions have been optimized to maximize the processivity of the enzyme to ensure rapid, complete, and reproducible methylation of DNA for accurate DNA methylation analysis. This product is supplied with 10X Reaction Buffer and S-adenosylmethionine cofactor.

Methylase activities of CpG Methylase from Zymo Research versus that of another supplier were tested for complete methylation of a linearized plasmid DNA. Completion of CpG methylation was assessed by resistance to digestion with a methylation-specific endonuclease (HpaII). The CpG Methylase from Zymo Research completely methylated the CpG sites in the DNA whereas that of the other supplier did not. Samples were assayed in duplicate.



Product	*Cat. No.*	*Size*
CpG Methylase (M. SssI)	E2010	200 U
	E2011	400 U

GpC Methylase (M.CviPI)

Use

In vitro Methylation of DNA..... ✓

GpCpGpC

Specifications

Enzyme Concentration..... 4 U/µl
Storage.....-20°C
Inactivation..... 65°C for 20 min.
Standard Reaction Time..... 2 hr.

Unit Definition

One unit (U) is defined as the amount of enzyme required to protect 1 µg of λ DNA against cleavage by HaeIII restriction endonuclease in a total reaction volume of 20 µl for 1 hour at 37°C.

Highlights

- For complete, *in vitro* methylation of DNA for methylation analysis.
- Methylation of chromatin DNA for DNA accessibility studies.
- Inhibition of endonucleases with overlapping GpC sequence recognition.
- [^{3}H]-labeling of DNA.

Description

Zymo Research's GpC Methylase completely methylates all cytosines (C^5) within a 5′…GpC…3′ context in double-stranded DNA. The enzyme is specific for both non-methylated and hemimethylated DNA. The recombinant GpC Methylase is isolated from an *E. coli* strain that expresses the methyltransferase gene from *Chlorella* virus. The reaction conditions are optimized to maximize the processivity of the enzyme to ensure rapid, complete, and reproducible methylation of DNA for accurate DNA methylation analysis. This product is supplied with 10X Reaction Buffer and S-adenosylmethionine cofactor.

Product	*Cat. No.*	*Size*
GpC Methylase (M. CviPI)	E2014	200 U
	E2015	1,000 U

5-hmC Glucosyltransferase

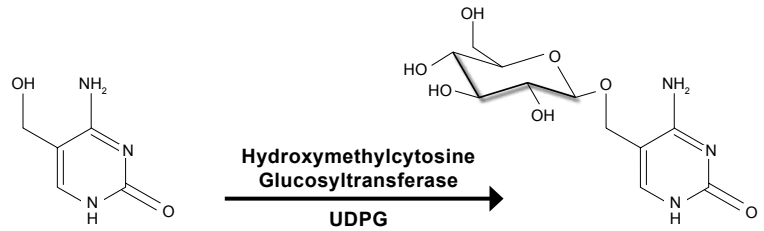
Highlights

- Highly processive enzyme for specific modification of 5-hydroxymethylcytosine (5-hmC) with a glucose moiety.
- Ideal for locus specific and global quantification of hydroxymethylated DNA.

Description

5-hmC Glucosyltransferase from Zymo Research is a highly active enzyme that specifically tags 5-hydroxymethylcytosine in DNA with a glucose moiety yielding glucosyl-5-hydroxymethylcytosine.

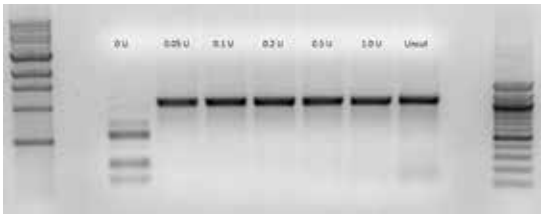
Glucosylation of 5-hydroxymethylcytosine by 5-hmC Glucosyltransferase can be used for sequence specific and locus specific (Quest 5-hmC™ Detection Kit, p. 30), as well as global quantification and enrichment (Quest 5-hmC™ Enrichment Kit, p. 32) of 5-hydroxymethylcytosine.



5hmC
5-Hydroxymethylcytosine

Glucosyl-5hmC
Glucosyl-5-hydroxymethylcytosine

5-hmC Glucosyltransferase transfers a glucose moeity from uridine diphosphoglucose (UDPG) onto pre-existing 5-hydroxymethylcytosines within DNA.

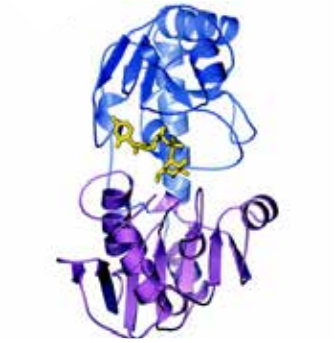


Recombinant 5-hmc Glucosyltransferase from Zymo Research demonstrates high activity and specificity. An 897-bp 5-hmC amplicon with two glucosyl-sensitive Csp6I sites was incubated with the indicated amount (U) of 5-hmc Glucosyltransferase for one hour at 37°C. Following glucosylation, 10 U of Csp6I was added to the reaction and incubated for an additional hour. Amplicons were purified using the DCC®-5 (p. 51) and visualized with agarose gel electrophoresis. All reactions that included 5-hmc Glucosyltransferase demonstrated complete protection from Csp6I digestion by comparison with an uncut template.

Product	*Cat. No.*	*Size*
5-hmC Glucosyltransferase	E2026 E2027	100 U 200 U

Use

5-hmC Detection..... ✓
5-hmC Enrichment..... ✓



Specifications

Enzyme Concentration..... 2 U/µl
Storage..... -20°C
Standard Reaction Time..... 2 hr.

Unit Definition

One unit (U) is defined as the amount of enzyme needed to protect 1µg of 5-hmC DNA Standard (D5405-3, p. 34) from Csp6I digestion.

Zymo*Taq*™ DNA Polymerase

Use

Amplification of Bisulfite-converted & CpG Rich DNA..... ✓
Amplification of DNA..... ✓
TA cloning ..... ✓

Specifications

Provided as a PreMix or as Part of a Set

Enzyme Concentration

Zymo*Taq*™ DNA Polymerase... 5 U/µl
Zymo*Taq*™ PreMix (2X)..... 4 U/50 µl

Unit Definition

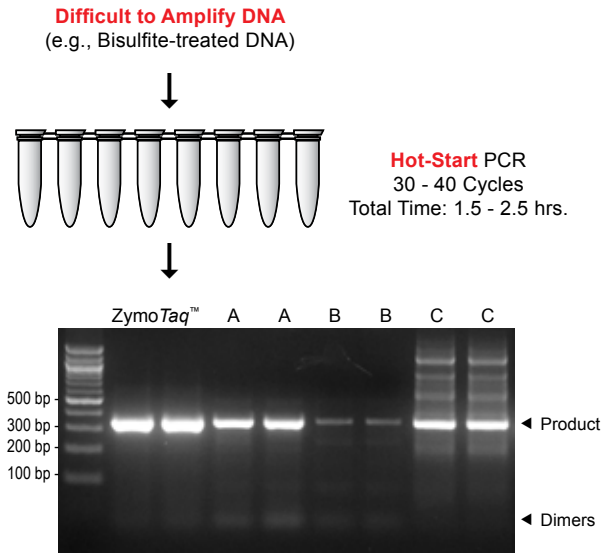
One unit (U) is defined as the amount of enzyme required for the incorporation of 10 nM dNTPs into an acid-insoluble form in 30 minutes at 72°C.

Highlights

- Hot-start DNA polymerase for robust product formation.
- Reduces non-specific PCR product formation from difficult templates (e.g., bisulfite-converted DNA).
- Compatible with real-time, quantitative PCR, and suitable for TA-cloning.

Description

Zymo*Taq*™ DNA Polymerase is a hot-start polymerase that is ideal for amplification of bisulfite-converted DNA. Since it is a heat-activated, thermostable DNA polymerase, Zymo*Taq*™ reduces primer dimer and non-specific product formation, whereas conventional polymerases typically exhibit these problems with bisulfite-converted DNA templates. In addition to the amplification of bisulfite-treated DNA for methylation detection, Zymo*Taq*™ DNA polymerase can also be used for conventional PCR and real time PCR. The enzyme also has 3′-terminal transferase activity, making it ideal for use in TA-cloning by the addition of "A" overhangs to amplified DNA.



PCR products of immunoprecipitated, methylated DNA vary depending on the hot-start polymerase used. Methylated DNA was immunoprecipitated using the Methylated-DNA IP Kit. DNA (post-IP) was used in a PCR assay comparing Zymo Research's hot-start Zymo*Taq*™ polymerase vs. that of three other suppliers (A, B, and C). Expected amplicon size is 350 bp. PCR products (in duplicate) were separated in a 2.0% (w/v) agarose TAE/EtBr gel. The use of Zymo*Taq*™ generated specific, robust products with minimal non-specific banding compared to others.

Product	*Cat. No.*	*Size*
Zymo*Taq*™ DNA Polymerase	E2001 E2002	50 rxns. 200 rxns.
Zymo*Taq*™ PreMix	E2003 E2004	50 rxns. 200 rxns.
Zymo*Taq*™ qPCR PreMix	E2054 E2055	50 rxns. 200 rxns.

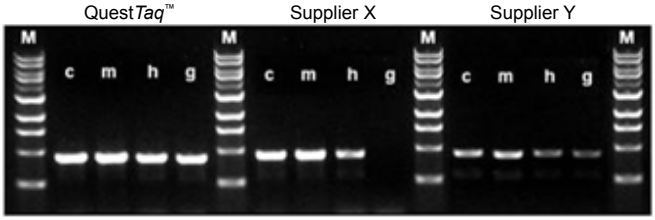
Quest*Taq*™ PreMix

Highlights

- Premixed reagents for PCR or real-time PCR analysis.
- Ideal for robust, non-biased amplification of 5-mC, 5-hmC, and g5-hmC modified DNA.
- Ideal for real-time, quantitative, and end-point analyses.
- Compatible with a range of fluorescent dyes for use in real-time PCR.

Description

Quest*Taq*™ PreMix is supplied as a convenient 2X concentrated "master mix" containing all the reagents (i.e., dNTPs, $MgCl_2$, and enhancers) necessary for robust PCR with little or no by-product formation. The Quest*Taq*™ PreMix has been optimized for the non-biased amplification of cystosine, 5-methylcytosine (5-mC), 5-hydroxymethylcytosine (5-hmC), and glucosyl-5-hydroxymethylctosine (g-5-hmC) containing DNA, ensuring high yield amplification across a wide range of templates. The Quest*Taq*™ PreMix differs from Quest*Taq*™ qPCR PreMix in that it excludes SYTO®9 dye from the PreMix solution, making it compatible with real-time and quantitative PCR with fluorescent dyes of the researcher's choosing.



Quest*Taq*™ polymerase consistently yields robust amplicons from DNA templates having modified/unmodified cytosines. The figure shows the level (intensity) of an ~900 bp product generated from DNA templates using Quest*Taq*™ PreMix or the polymerases from Suppliers X and Y. Lanes correspond to amplicons from template DNA containing: unmodified cytosine (c), 5-methylcytosine (m), 5-hydroxymethylcytosine (h), or glucosyl-5-hydroxymethylcytosine (g). (M) is a 1 kb DNA Marker.

Product	*Cat. No.*	*Size*
Quest*Taq*™ PreMix	E2050 E2051	50 rxns. 200 rxns.
Quest*Taq*™ qPCR PreMix	E2052 E2053	50 rxns. 200 rxns.

Use

Non-biased Amplification of 5-mC, 5-hmC, g5-hmC DNA..... ✓

Enzyme Concentration

2 U/10 µl

Unit Definition

One unit (U) is defined as the amount of enzyme required for the incorporation of 10 nmol dNTPs into an acid-insoluble form in 30 minutes at 72°C.

qPCR Thermocycler Compatibility

Real-time PCR instruments that do not require a passive reference dye [e.g., LightCycler® 480 (Roche), CFX96™ (Bio-Rad), etc.]

DNA Degradase™ & DNA Degradase Plus™

Use

Complete digestion of DNA into individual nucleotide/nucleoside components..... ✓

Specifications

DNA Degradase™

Enzyme Concentration..... 10 U/µl
Storage..... -20°C
Inactivation..... 70°C for 20 min.
Standard Reaction Time..... 1 hr.

DNA Degradase Plus™

Enzyme Concentration..... 5 U/µl
Storage..... -20°C
Inactivation..... 70°C for 20 min.
Standard Reaction Time..... 1 hr.

Unit Definition

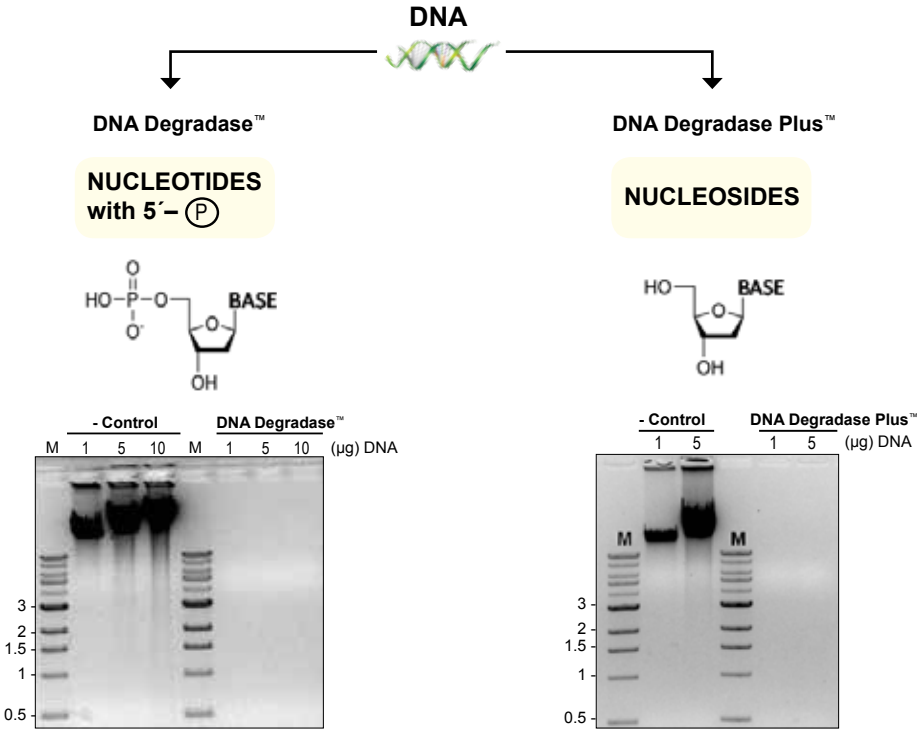
One unit (U) is defined as the amount of enzyme required to degrade 1 µg of λ DNA in a total reaction volume of 25 µl for 1 hour at 37°C.

Highlights

- 1 hour, single-enzyme digest vs. conventional 6 - 16 hour multi-step enzyme digestion protocols.
- Quick and simple procedure for completely degrading DNA into its individual nucleotide (DNA Degradase™) or nucleoside (DNA Degradase Plus™) component for quantitative analysis (e.g., whole-genome methylation analysis by HPLC, TLC, etc.)

Description

DNA Degradase™ and DNA Degradase Plus™ from Zymo Research are nuclease mixes that quickly and efficiently degrade DNA to its individual nucleotide or nucleoside components, respectively. DNA Degradase™ is ideal for whole-genome DNA methylation analysis by a number of downstream applications (i.e., HPLC, TLC, etc.). Digestion with the enzyme is performed via a one-step procedure that is faster and simpler than other available methods.



DNA Degradase™ efficiently degrades DNA: 1 µg, 5 µg, and 10 µg of λ DNA incubated with 1 µl (10 U) of DNA Degradase™ in 25 µl reaction volume and incubated at 37°C for 1 hour. "M" is a 1 kb DNA ladder (Zymo Research).

DNA Degradase Plus™ efficiently degrades DNA: 1 or 5 µg of λ DNA incubated with 5 U of DNA Degradase Plus™ in 25 µl reaction volume at 37°C for 1 hour. "M" is a 1 kb DNA ladder (Zymo Research).

Product	*Cat. No.*	*Size*
DNA Degradase™	E2016	500 U
	E2017	2,000 U
DNA Degradase Plus™	E2020	250 U
	E2021	1,000 U

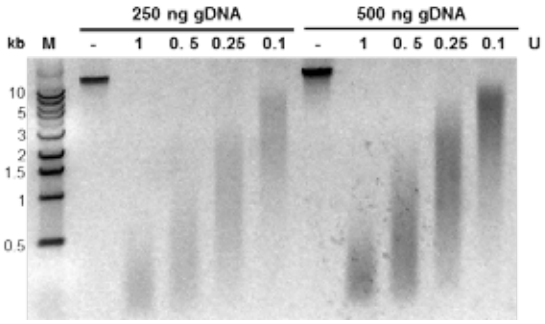
dsDNA Shearase™ Plus

Highlights

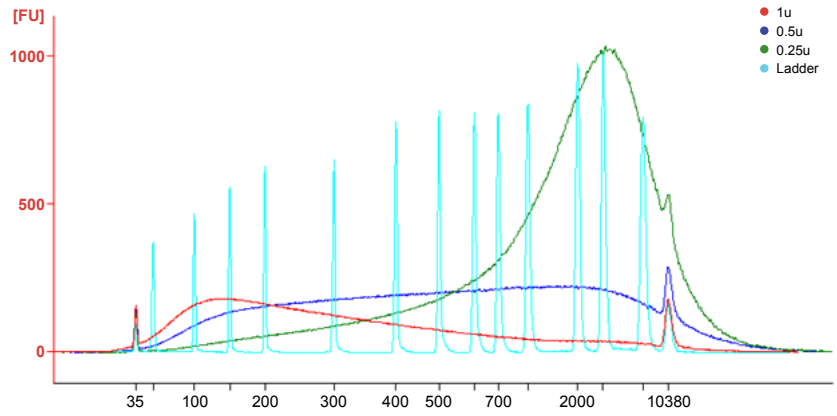
- The simplest method for generating random-ended dsDNA fragments.
- Fragment size is conveniently controlled by adjusting the enzyme concentration.
- dsDNA Shearase™ Plus-generated fragments are ideal for library construction, Next-Gen sequencing, and methylated DNA immunoprecipitation (MeDIP).

Description

Digestion with dsDNA Shearase™ Plus is the simplest method for DNA fragmentation as it circumvents the use of otherwise costly and cumbersome mechanical shearing devices. dsDNA Sherase™ Plus is an endonuclease that cleaves phosphodiester bonds in DNA to yield oligonucleotides with 5′-phosphate and 3′-hydroxyl termini. It has a particularly strong preference for double-stranded DNA (dsDNA) and generates random-ended DNA fragments of the desired size in a single step. Sequencing data demonstrates that dsDNA Shearase™ Plus does not introduce any detectable bias in the sequencing library preparation. This enzyme is compatible with low volume inputs thus minimizing sample loss. Digested DNA is easily purified in ≥ 6 µl with recommended DNA Clean & Concentrator® technology (p. 59) making it ideal for use in end modification (linker & adapter) procedures and other applications.



Fragmentation of HCT116 Cell DNA Using dsDNA Shearase™ Plus. 250 ng or 500 ng of HCT116 cell gDNA was incubated with 1, 0.5, 0.25, or 0.1 U dsDNA Shearase™ Plus for 20 min at 42°C. Fragmented DNA was purified with the DNA Clean & Concentrator® and subsequently resolved in a 1% agarose gel.



Distribution of HCT116 cell DNA fragments produced by dsDNA Shearase™ Plus separated using an Agilent Bioanalyzer 2100.

Product	*Cat. No.*	*Size*
dsDNA Shearase™ Plus	E2018-50 E2018-200	50 U 200 U
dsDNA Shearase™ Plus with DNA Clean & Concentrator®-5	E2019-50 E2019-200	50 U + 50 preps. 200 U + 200 preps.

Use

DNA Fragmentation.....✓

Specifications

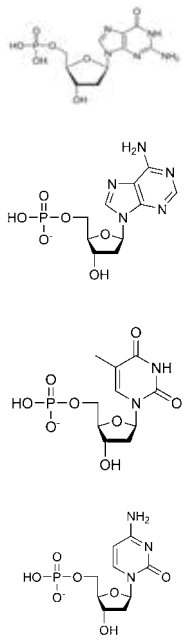
Enzyme Concentration..... 1 U/µl
Storage..... -20°C
Inactivation..... 65°C for 5 min.
Standard Reaction Time..... 20 min.

Unit Definition

One unit (U) is defined as the amount of enzyme required to convert 250 ng human DNA into DNA fragments in the range of 100-500 bp in 20 minutes at 42°C in a total reaction volume of 10 µl.

dNTPs

Use
PCR..... ✓



Highlights

- Ready to use dNTP Mix (dATP, dTTP, dGTP, dCTP) of ultra high purity; >99% trisphosphate by HPLC
- Readily incorporated into PCR amplicons with Zymo*Taq*™, Quest*Taq*™ or other DNA polymerases
- Free of endo-, exodeoxyribonuclease, ribonuclease, phosphatase and nicking activities

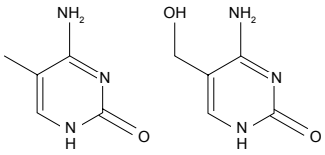
Description

dNTP Mix and dATP, dTTP, dGTP, dCTP from Zymo Research are of ultra high purity and can be used to generate DNA by PCR using Zymo*Taq*™ or other DNA polymerases.

Product	*Cat. No.*	*Size*
dNTP Mix [10 mM]	D1000 D1000-1	500 µl 100 µl
dATP [100 mM]	D1005	250 µl
dTTP [100 mM]	D1010	250 µl
dGTP [100 mM]	D1015	250 µl
dCTP [100 mM]	D1020	250 µl

Methylated & Hydroxymethylated Nucleotides

Use
PCR..... ✓



5-mC **5-hmC**

Highlights

- Ready to use 5-Hydroxymethylcytosine mix (dATP, dTTP, dGTP, d5hmCTP) and 5-Methylcytosine dNTP mix (dATP, dTTP, dGTP, d5mCTP) is of ultra high purity; >99% trisphosphate by HPLC
- Readily incorporated into PCR amplicons with Zymo*Taq*™, Quest*Taq*™ or other DNA polymerases.
- Free of endo-, exodeoxyribonuclease, ribonuclease, phosphatase and nicking activities.

Description

Methylated & hydroxymethylated nucleotides from Zymo Research are of ultra high purity and can be used to generate DNA by PCR using Zymo*Taq*™, Quest*Taq*™ or other DNA polymerases.

Product	*Cat. No.*	*Size*
5-Methylcytosine dNTP Mix [10 mM]	D1030	250 µl
5-Methyl dCTP [10 mM]	D1035	100 µl
5-Hydroxymethylcytosine dNTP Mix [10 mM]	D1040	250 µl
5-Hydroxymethyl dCTP [100 mM]	D1045	100 µl


Apple
(Malus domestica)


Alligator
(Alligator mississippiensis)


Cow
(Bos taurus)


Barrel Clover
(Medicago truncatula)


Chicken
(Gallus gallus domesticus)


Platypus
(Ornithorhynchus anatinus)


Salmon
(Salmo salar)


Rat
(Rattus norvegicus)


Mouse
(Mus musculus)

Explore Epigenomics with us

Shown here are some of the diverse species analyzed by our team


Human
(Homo sapien)


Wheat
(Triticum)


Dog
(Canis lupus familiaris)


Oppossum
(Didelphimorphia)


Soybean
(Glycine max)


Pig
(Sus scrofa domesticus)


Bean
(Phaseolus vulgaris)


Wine Grape
(Vitis vinifera)


Fruit Fly
(Drosophila melanogaster)

Explore Epigenomics with the Most Comprehensive Services for Epigenetic Analysis!

Following the publication of the sequence of the human genome in 2001, and more recently the ENCODE Project in 2012, it has become clear that genes and chromatin are far more complicated than previously anticipated. DNA, once believed to be “junk”, has been found to code for specific non-coding transcripts and to contain important regulatory elements. It is now apparent that investigating one or a few genes is no longer sufficient to answer the questions currently posed by researchers in the fields of molecular biology, genetics, and systems biology. Genome-wide genetic and epigenetic analyses need to be considered for complete assessment of the regulation of cellular processes.

Zymo Research makes these analyses available to every researcher with a repertoire of genome-wide services! All Next-Gen Epigenetic Services feature state-of-the-art sample prep technologies, cutting-edge bioinformatics, competitive pricing, and can be combined for the most comprehensive analysis possible. Zymo Research's Epigenetic Services can be applied to a broad range of sample sources including human, mouse, plant, platypus, spotted hyena, and more! The best part of all, Zymo Research's bioinformatics specialists will provide you with customizable, publication-ready data.

The scientists at Zymo Research have been developing industry leading epigenetic technologies and workflows for more than a decade, and remain committed to pioneering new research tools and services to meet the future challenges of the rapidly growing field of epigenetics. Explore epigenomics with Zymo Research today!

All our services are customizable and can be combined to suit your needs!

Please contact us at services@zymoresearch.com to inquire today.

Epigenetic Analysis

DNA Methylation
Platforms for genome-wide and targeted single-base resolution DNA methylation analysis

DNA Hydroxymethylation
Enrichment and single-base resolution platforms for detection of 5-hydroxymethylation in DNA

ChIP-Seq
Genome-wide analysis of protein-DNA interactions

Sequencing & Expression

Microbiomics
Next-Gen Sequencing services for discovery, identification, and characterization of microbial communities

RNA-Seq
Transcriptome-wide analysis of total RNA or small RNA (miRNA)

Targeted Sequencing
Targeted DNA (inc. exome), DNA methylation/hydroxymethylation, and RNA sequencing—including established and customized gene panels

Large Genome Sequencing
Complete genomic sequencing of human, mouse, plant, and other large and complex genomes

Small Genome Sequencing
Sequencing of viruses (DNA & RNA), bacteria, and other microbial genomes

Additional Services

Mass Spectrometry
Global quantitative analysis of DNA methylation and hydroxymethylation levels

Custom Bioinformatics
Fully customizable bioinformatics solutions for the analysis of raw data from any of your Next-Gen sequencing experiments

DNA Methylation 5-mC

Zymo Research's Epigenetic Services offer three platforms for single nucleotide resolution DNA methylation analysis in any species. The **Methyl-MiniSeq™** platform covers ~10% of the methylome, the **Methyl-MidiSeq™** covers ~30% of the methylome, while the **Methyl-MaxiSeq™** platform profiles the entire methylome. Also available is a **Targeted Bisulfite Sequencing** service for high-depth, single-base/quantitative resolution of methylation status in multiple defined loci.

Methyl-MiniSeq™

This platform (an improved version of Reduced Representation Bisulfite Sequencing for greater coverage) can be used to detect 3-4 million unique CpG sites, allowing >85% coverage of all CpG islands and >80% of all gene promoters for a maximal amount of methylation data from less sequencing reads, reducing the overall cost. The system is conducive to biomarker discovery by providing for the identification and analysis of differentially methylated regions (DMRs) between samples.

Methyl-MidiSeq™

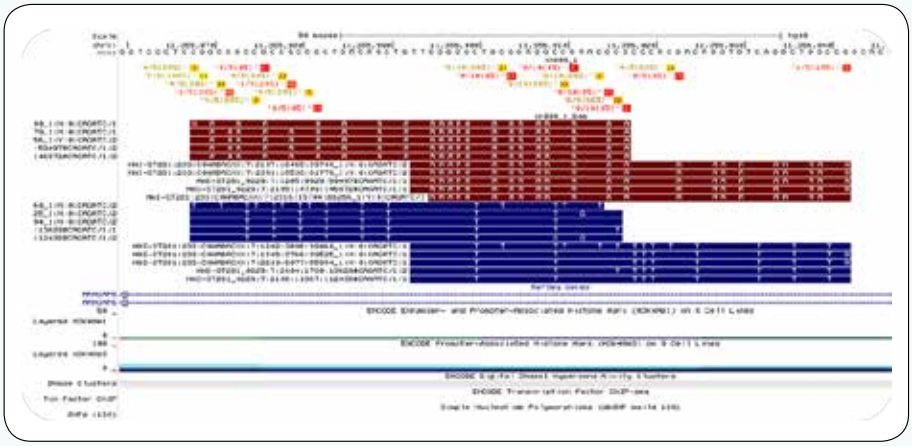
Methyl-MidiSeq™ can be used to detect 8-9 million unique CpG sites. It extends the coverage of the Methyl-MiniSeq™ platform to include a large majority of genetic regulatory elements, gene bodies, and repeated DNA sequences. It is a good option for those researchers requiring methylome analysis outside of gene promoters and CpG islands.

Methyl-MaxiSeq™

The Methyl-MaxiSeq™ platform (whole-genome bisulfite sequencing) detects DNA methylation across the entire genome. DNA methylation information is provided in CpG context as well as in the less common CHG and CHH contexts. The platform attains an average read coverage of 15-20X per base (for the human genome). This can be modified depending on your requirements. Since the whole-genome sequence is provided, SNP analysis can be performed simultaneously.

Targeted DNA Bisulfite Sequencing

Targeted Bisulfite Sequencing allows researchers to receive significant data sets for regions of interest from a large number of samples while avoiding the expense and time required for genome-wide sequencing. This is particularly well-suited for validation of putative biomarker candidates. Our Targeted Bisulfite Sequencing Service includes: Primer Design and Validation to Amplify Bisulfite-Converted DNA, Target-Specific Enrichment PCR, Adapter Addition/Sample Bar-coding, Latest Next-Gen Sequencing Technology and Bioinformatic Analysis.



UCSC genome browser tracks for CpG sites and sequencing reads from Methyl-MiniSeq™ (RRBS). For the CpG Tracks (top): *Red* indicates low methylation, whereas *Yellow* indicates high methylation. The number next to each CpG indicates the exact methylation value. For the Read Tracks, blue indicates forward or reverse strandedness. Letters A and T indicate positions of the bisulfite converted cytosines.

DNA Hydroxymethylation

5-hmC

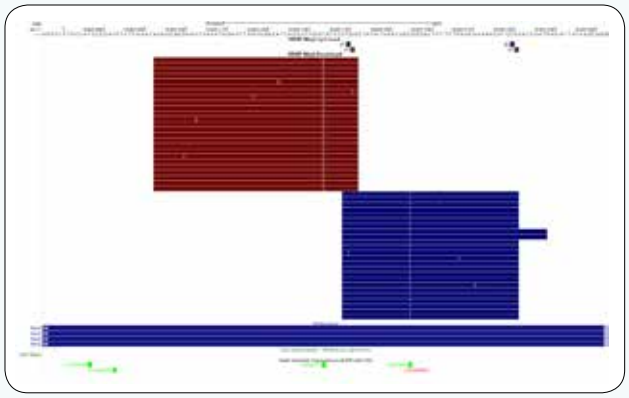
Our services for DNA hydroxymethylation analysis offer unparalleled sensitivity and coverage of 5-hydroxymethylcytosine (5-hmC). Two platforms are available: **Reduced Representation Hydroxymethylation Profiling (RRHP)** and **5-hmC-CapSeq**. Both combine unique whole-genome library preparation with Next-Gen sequencing to ensure high coverage and sensitivity.

RRHP

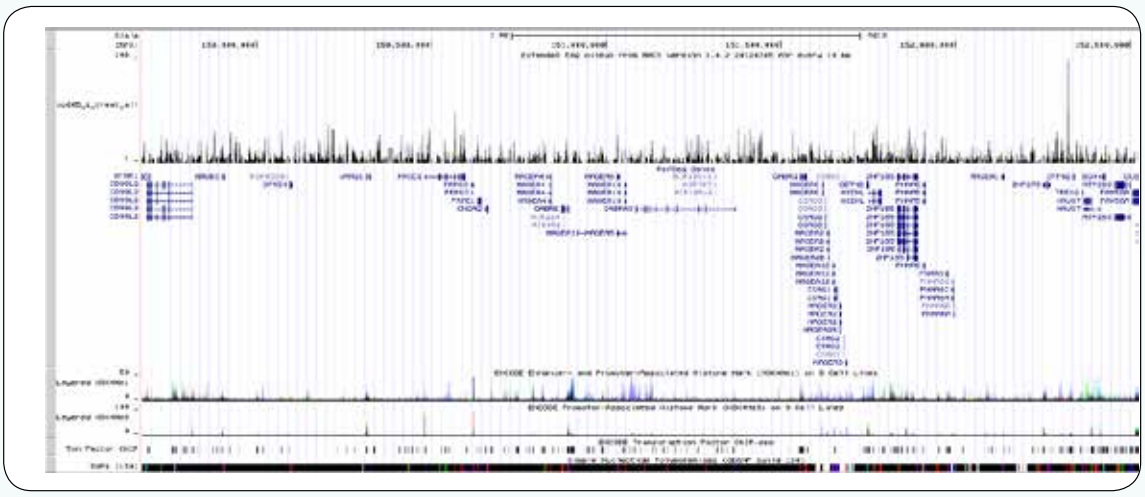
This service is for genome-wide profiling of 5-hydroxymethylcytosine in DNA at single-nucleotide resolution. RRHP also allows strand-specific determination of the location of the 5-hmC modification as well as quantification of 5-hmC levels. Data from RRHP can be combined with DNA methylation data from Methyl-MiniSeq™ (p. 47), allowing for direct comparison of DNA methylation and hydroxymethylation in the same sample. RRHP is compatible with low DNA inputs and has the added advantage of providing read data for simultaneous SNP detection.

5-hmC-CapSeq

Features J-Binding Protein (JBP) based enrichment of hydroxymethylated DNA followed by Next-Gen sequencing. Subsequent genome-wide analysis reveals 'peaks', or regions of increased read density, that indicate the presence of 5-hmC in DNA. This platform specifically distinguishes 5-hmC from 5-mC in DNA, and exhibits high sensitivity with low background.



UCSC genome browser track for RRHP assay. Red and blue color represent the strandedness from reverse and forward direction respectively. The letter C and T in each strand indicate SNP positions.



UCSC genome browser track showing JBP-1 enriched 5-hmC peaks in human brain DNA

Epigenetic Analysis

ChIP-Seq

Chromatin Immunoprecipitation Sequencing (ChIP-Seq) is a technique that combines chromatin immunoprecipitation with the quantitative power and genome-wide coverage of Next-Gen sequencing. It is a powerful tool for genome-wide mapping of DNA interactions with transcription factors, histone modifications, and chromatin binding proteins that is essential for understanding the effect of DNA-protein interaction on gene regulation.

Zymo Research's **ChIP-Seq** service allows you to perform the ChIP assay yourself and send in the enriched chromatin for library construction and Next-Gen sequencing, or Zymo Research can perform the ChIP for you, using an optimized chromatin shearing/enrichment procedure.

Sequencing & Expression Analysis

De Novo Sequencing, Re-sequencing and Targeted Sequencing

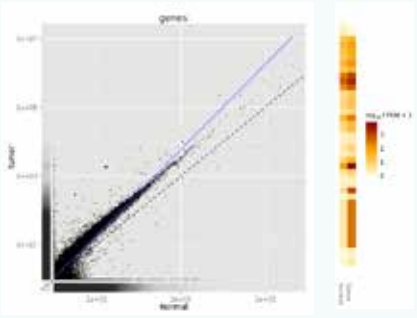
Zymo Research offers the latest Next-Generation Sequencing technology and state of the art bioinformatics for *de novo* sequencing, re-sequencing, and targeted sequencing of large and small genomes.

RNA-Seq

Zymo Research's RNA-Seq service makes Next-Gen transcriptome analysis available to every researcher, without the need for expensive equipment or bioinformatics expertise. Now you can achieve transcriptome-wide coverage of total RNA, or small RNA with the latest Next-Gen sequencing technology.

Useful for:

- Gene expression studies
- miRNA analysis
- Non-coding RNA investigations
- Discovering splice variants, SNPs, and RNA editing sites
- And much more!



Scatterplot and heatmap showing expression bias and gene expression, respectively.

Let Zymo Research's scientists do the work, starting with RNA purification and sample prep all the way through the bioinformatic analyses with the delivery of a report with publication-ready figures directly to you. Each project is fully customizable to ensure your needs are met!

Many types of analyses are available including total RNA-Seq, small RNA-Seq (miRNA), polyadenylated RNA-Seq, and non-polyadenylated RNA-Seq.

Microbiomics

Microbial Composition Profiling

- 16S rRNA gene, 18S rRNA gene, and/or fungal ITS sequencing for genus-level determination
- Shotgun Metagenomic Sequencing for species-level determination

Novel Microbe Identification

High-quality, paired-end and mate-pair reads ensure superior de novo genome assembly from metagenomes

Biological Function Analysis

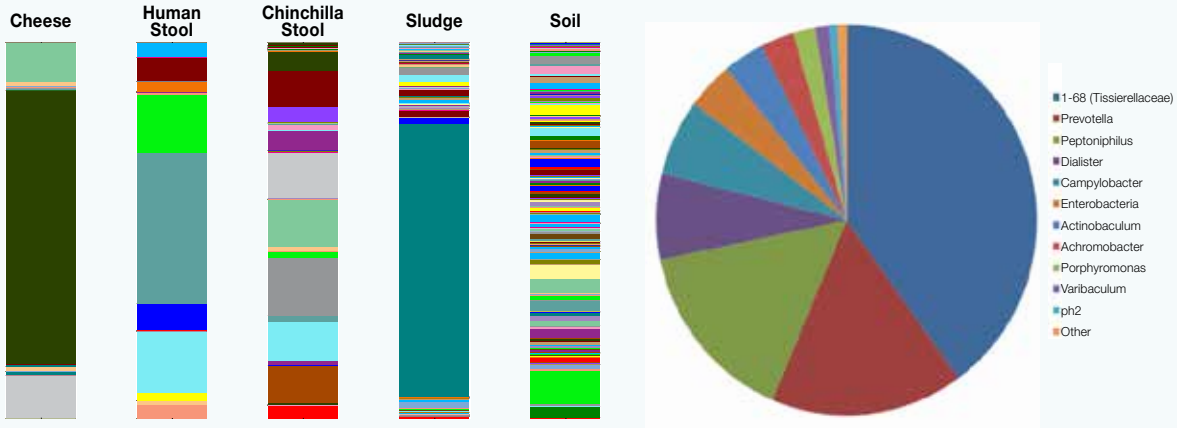
The full gene complement and metabolic pathway analysis in a microbial community (e.g., antibiotic resistance)

Why consider a Next-Gen Sequencing approach to analyze microbial communities?

Because many microbes can't be cultured and are missed using conventional analysis techniques. Using Next-Gen Sequencing it is possible accurately assess entire microbial communities (microbiomes) using targeted (16S rRNA gene) or whole genome sequencing without the need for culturing.

Molecular biology is currently being revolutionized by whole-genome sequencing of individual microorganisms, as well as entire microbial communities (microbiomes), a field known as metagenomics. With direct access to the genomes of microorganisms in their natural habitat, metagenomics has been applied in environmental studies as well as biomarker research and has opened a new era in the study of microbial diversity.

MICROBIOMICS
NO MICROBE LEFT BEHIND...



Other Services

Mass Spectrometry

Zymo Research offers DNA composition analysis with LC/MS analysis. Please inquire for more information.

Custom Bioinformatics

Do you have Next-Gen sequencing data that you need analyzed? Zymo Research offers complete bioinformatics solutions to fulfill your needs. Whether it is whole-genome bisulfite sequencing data or ChIP-Seq data, we can help make sense of your overwhelming data sets. We use established as well as customizable bioinformatic pipelines to transform raw sequence data into manageable and interpretable figures and data sets. Simply provide the raw (FASTQ) or aligned (SAM or BAM) data and we will provide you with your desired downstream analyses.

Service Packages

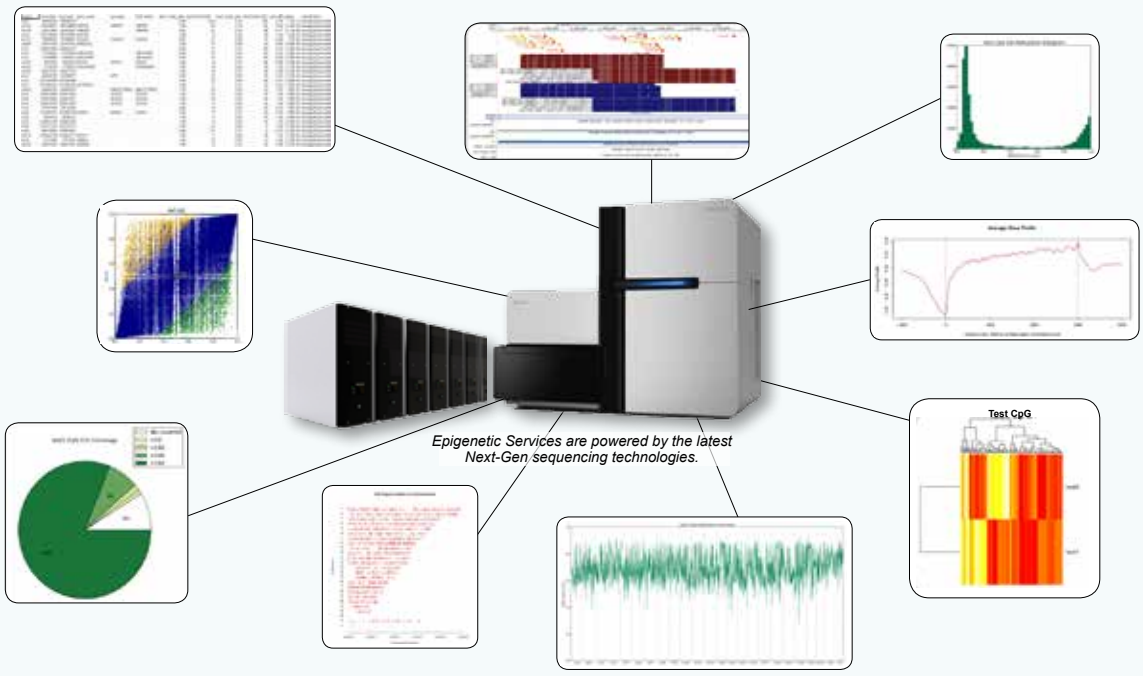
Basic Service Packages for all of the platforms include sample standardization, library construction, NGS, and raw data alignment.

Full Service Packages offer additional down-stream bioinformatic processing and statistical analysis specifically tailored to fit your needs.

Explore Epigenomics with Zymo Research and inquire today at www.zymoresearch.com.

Services are customizable and can be combined to suit your needs!

Please contact us at services@zymoresearch.com to inquire today.



Epigenetic Services are powered by the latest Next-Gen sequencing technologies.

2 DNA Purification

The fidelity of the method used for the isolation/purification of DNA from biological samples and from reaction mixtures is of critical importance when considering the success of subsequent downstream molecular applications.

Samples can be challenging to process, due to a variety of factors: small sample size, contaminants, degradation, and source (i.e. tough-to-lyse). Extraction methods must also protect DNA from degradation, especially when storing/transporting precious samples. Inadequate preservation can lead to suboptimal analysis. Undesired contaminants necessitate removal to prevent interference with downstream applications. These can include proteins, RNA, chemicals and compounds from the source material which can convolute procedures through nonspecific interactions with the DNA substrate and/or method used for analysis.

It is clear that many molecular-based applications including PCR, DNA sequencing, microarray, Southern blotting, etc., require high quality DNA. This considered, the scientists at Zymo Research have developed a range of DNA purification kits designed for the simple and rapid recovery of high-yield, inhibitor-free DNA from diverse sample sources.

DNA Purification *Made Simple*™

DNA PURIFICATION

Quick Product Guide

DNA Clean-up

Enzymatic Reactions & Impure or Diluted DNA

DNA Clean & Concentrator® Kits
Ultra pure DNA in 2 minutes
(50 bp to 23 kb)
D4003 Page 60
Format:
Spin Column
96-Well Plate

Genomic DNA Clean & Concentrator® Kits
High molecular weight DNA clean-up.
(1 kb to > 200 kb)
D4010 Page 67
Format:
Spin Column
96-Well Plate

Oligo Clean & Concentrator™ Kits
DNA & RNA
oligos and probes
(16 to 200 nt)
D4060 Page 65
Format:
Spin Column
96-Well Plate

Select-a-Size DNA Clean & Concentrator®
High quality, size selected DNA in 7 minutes.
(library preparation and NGS applications)
D4080 Page 66
Format:
Spin Column

Sequenced DNA Samples

ZR DNA Sequencing Clean-up Kits™
Rapid clean-up of post-cycle DNA sequencing contaminants.
D4050 Page 70
Format:
Spin Column

Removal of Polyphenolic Inhibitors

OneStep™ PCR Inhibitor Removal Kits
For polyphenolic-inhibitor removal from DNA samples.
D6030 Page 71
Format:
Spin Column
96-Well Plate

Agarose Gel Excisions

Zymoclean™ Gel DNA Recovery Kits
Rapid recovery (>80%) of DNA from agarose gels.
D4001 Page 72
Format:
Spin Column
96-Well Plate

Plasmid DNA Purification

From *E. coli*

Miniprep Scale

Zyppy® Plasmid Miniprep Kits

Pellet-free plasmid DNA isolation in 8 minutes.

D4036 Page 81

Format:
Spin Column
96-Well Plate
Magnetic Beads

ZR Plasmid MiniPrep™-Classic

Plasmid DNA from cell pellets.

D4015 Page 84

Format:
Spin Column

Midiprep, Maxiprep, and Gigaprep Scales

ZymoPURE™ Kits

Transfection-ready plasmid DNA in 18 minutes.

D4200-D4204 Page 76-78

Format:
Spin Column

BAC, YAC, PAC Plasmid

ZR BAC DNA

BAC, YAC, PAC plasmid DNA isolation.

D4048 Page 85

Format:
Spin Column

From Yeast

Miniprep Scale

Zymoprep™ Yeast Plasmid MiniPrep

Plasmid DNA isolation from yeast cultures.
*Using Zymolyase

D2001 Page 86

Format:
Spin Column

Quick Product Guide

DNA Isolation

Biological Fluids, Cell Cultures & Solid Tissues

Biological Fluids, Cells & Tissues

Quick-DNA™ Universal Kit

High quality DNA from ≤ 200 µl biological fluids, ≤ 5 x 10^6 cells, and ≤ 25 mg tissue.

D4068 Page 89

Format:
Spin Column
96-Well Plate

Serum, Plasma, Urine, Cerebrospinal Fluid, & Amniotic Fluid

(large volume)

Quick-cfDNA™ Serum & Plasma Kit

Total cell-free DNA
≤ 10 ml serum/plasma
≤ 5 ml cerebrospinal fluid
≤ 1 ml amniotic fluid

D4076 Page 91

Format:
Spin Column

Quick-DNA™ Urine Kit

For total DNA, cellular DNA or cell-free DNA
5 - 40 ml of urine

D3061 Page 90

Format:
Spin Column

Fixed Tissues

(FFPE and glass-slide samples)

ZR FFPE DNA MiniPrep™

Zymo-Spin™ column isolation of RNA free, high quality DNA

D3065 Page 94

Format:
Spin Column

Pinpoint® Slide DNA Isolation System

For DNA isolation from glass-slides.

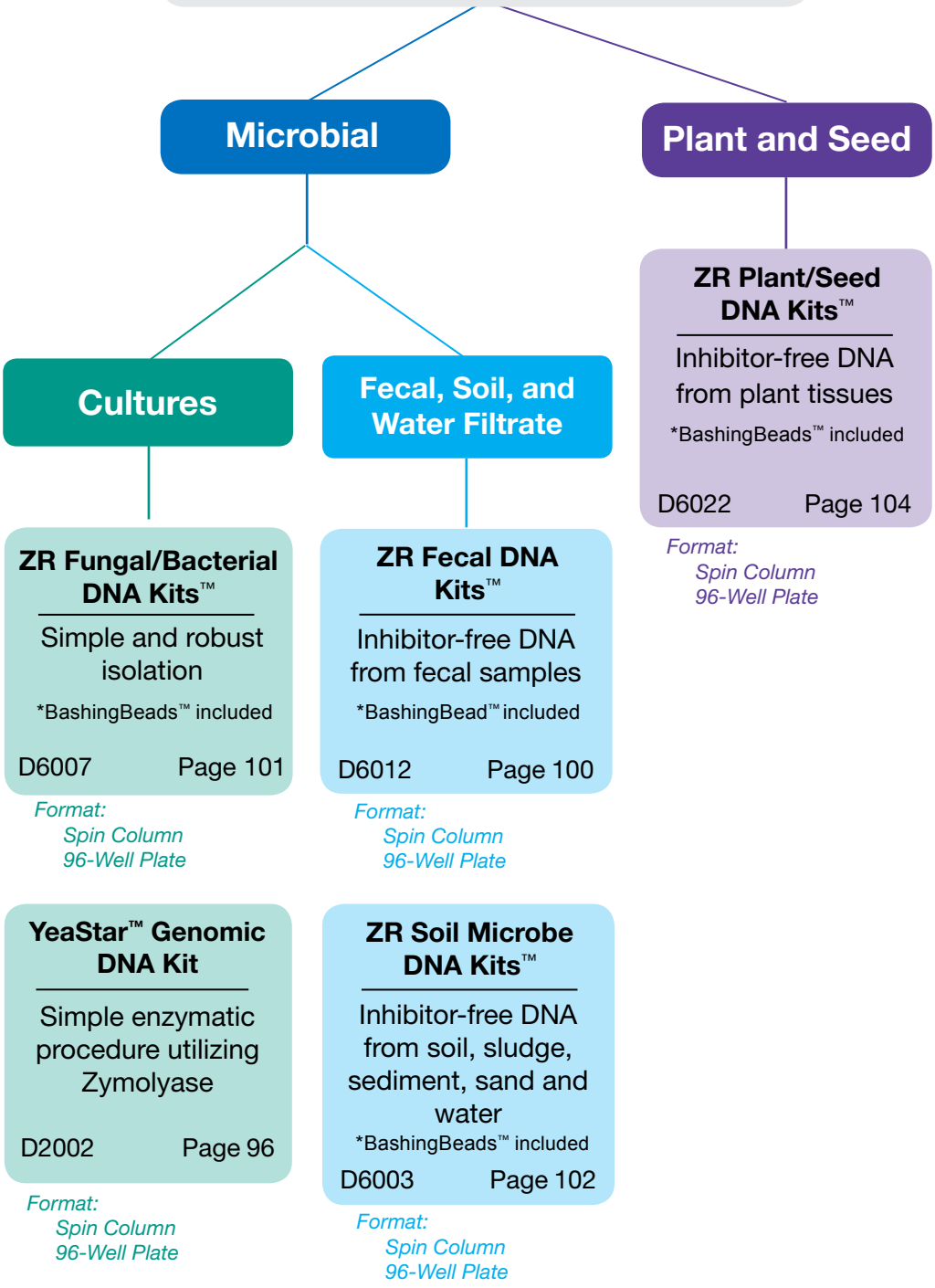
D3001 Page 95

Format:
Spin Column

Quick Product Guide

DNA Isolation

Tough-to-Lyse Samples



DNA Clean-up

DNA Clean-up from any Enzymatic Reaction

High quality, inhibitor-free DNA is crucial for successful PCR, DNA ligation/cloning, sequencing, arrays, etc. The scientists at Zymo Research have developed the most comprehensive technologies for DNA clean-up and concentration from any preparation. Core to these products is the total removal of salts/alcohol from samples with uniquely designed spin columns and plates that ensure complete elution with no binding/wash buffer carryover. Coupled with uniquely formulated buffers, these technologies assure the purification of high quality DNA without the inclusion of inhibitors.

DNA Clean & Concentrator®

Technology Overview

Zymo Research pioneered rapid, efficient DNA clean-up and concentration with the introduction of its DNA Clean & Concentrator® (DCC®) product line. Since its inception, the DCC® family of products has evolved into one of the most efficient and versatile methods for cleaning and concentrating DNA from a range of sample sources into minimal elution volumes (i.e., ≥ 6 µl). DNA is effectively desalted and concentrated from PCR, endonuclease digestions, DNA modification reactions, isotope/fluorescence labeling reactions, etc. DNA recovered with the DCC® kits is ideal for use in subsequent sequencing, cloning, ligation, microarray, and endonuclease digestion procedures. The DCC® kits are available as DCC®-5, DCC®-25, DCC®-100, and DCC®-500 formats that are based on the maximal DNA binding capacities (in micrograms) per column treatment. Also, the Genomic DNA Clean & Concentrator® is available for rapid clean-up of large-sized DNA (up to and ≥ 200 kb) making it ideal for genomic DNA clean-up. The Oligo Clean & Concentrator™ provides a streamlined method for efficient recovery and clean-up of DNA fragments and oligonucletides ≥16 nt. *Select-a-Size* DCC® is a newly developed technology with size selection capabilities that are commonly used for NGS cleanups.

***6** µl elution volume, **2** minute procedure, **0** µl retention volume*
For DCC®-5 Kit

Single Column Format

	DCC®-5	DCC®-25	DCC®-100	DCC®-500	Genomic DCC® -10	Genomic DCC® -25
Name	Zymo-Spin™ I & IC	Zymo-Spin™ II & IIC	Zymo-Spin™ V	Zymo-Spin™ VI	Zymo-Spin™ IC-XL	Zymo-Spin™ IIC-XL
Binding Cap.	5 µg / prep.	25 µg / prep.	100 µg / prep.	500 µg / prep.	10 µg / prep.	25 µg / prep.
Elution Vol.	≥ 6 µl	≥ 25 µl	≥ 150 µl	≥ 2 ml	≥ 10 µl	≥ 35 µl
Kits	D4003, D4013	D4005, D4033	D4029, D4030	D4031, D4032	D4010, D4011	D4064, D4065

96-Well Format

	ZR-96 DCC®-5	ZR-96 Oligo CC™	ZR-96 DNA Clean-up Kit™	ZR-96 Genomic DCC® -5
Name	Zymo-Spin™ I-96 Plate	Zymo-Spin™ I-96 Plate	Silicon-A™ Plate	Zymo-Spin™ I-96-XL Plate
Binding Cap.	5 µg/well	5 µg/well	5 µg/well	5 µg/well
Elution Vol.	10 µl	10 µl	30 µl	≥ 15 µl
Dimensions (H x W x L)	35 mm x 83 mm x 125 mm	35 mm x 83 mm x 125 mm	19 mm x 83 mm x 125 mm	35 mm x 83 mm x 125 mm
Binding + Collection Plate Height	60 mm	60 mm	43 mm	60 mm
Kits	D4023, D4024	D4062, D4063	D4017, D4018	D4066, D4067

DNA Clean & Concentrator®-5 Kits

Use

PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Binding Capacity..... 5 µg/prep.
DNA Size Limits..... 50 bp - 23 kb

DNA Clean & Concentrator®-5
Format..... Spin Column
Elution Volume..... ≥ 6 µl
Processing Time..... 2 min.

ZR-96 DNA Clean & Concentrator®-5
Format..... 96-Well
Elution Volume..... ≥ 10 µl
Processing Time..... 15 min.

Available Formats

Zymo-Spin™ I D4003, D4004 (p. 175)

Zymo-Spin™ IC D4013, D4014 (p. 175)

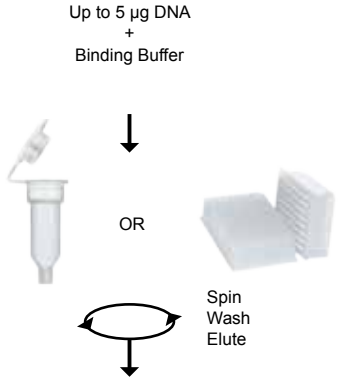
Zymo-Spin™ I-96 D4023, D4024 (p. 182)

Highlights

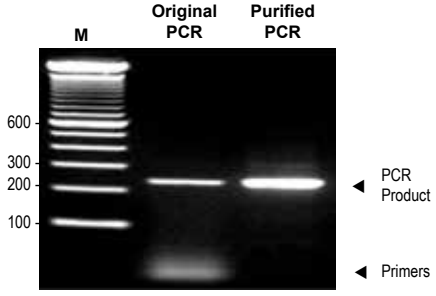
- Clean and concentrate up to 5 µg DNA with ≥ 6 µl elution volume in as little as two minutes with 0 µl wash residue carryover.
- Column and deep-well filtration plate designs allow DNA to be eluted at high concentrations into minimal volumes of water or TE buffer.
- Eluted DNA is optimal for any down stream molecular biology application.

Description

The DNA Clean & Concentrator®-5 and ZR-96 DNA Clean & Concentrator®-5 products provide purification of up to 5 µg DNA from PCR, endonuclease digestions, DNA modification reactions, isotope/fluorescence labeling reactions, etc. The products facilitate the removal of DNA polymerases, modifying enzymes, RNA polymerases, ligases, kinases, nucleases, phosphatases, and restriction endonucleases, as well as free dNTPs and their analogs including radiolabeled and fluorescent derivatives. Eluted DNA is suitable for PCR, arrays, ligation, sequencing, etc.



Ultra-pure DNA for...
✓ Sequencing
✓ DNA Ligation
✓ Endonuclease Digestion, etc.



Clean & Concentrated DNA. DNA samples, such as the PCR products shown here, can be efficiently purified and concentrated using the DNA Clean & Concentrator™-5.

Product	*Cat. No.*	*Size*
DNA Clean & Concentrator®-5 (uncapped)	D4003 D4004	50 preps. 200 preps.
DNA Clean & Concentrator®-5 (capped)	D4013 D4014	50 preps. 200 preps.
ZR-96 DNA Clean & Concentrator®-5	D4023 D4024	2 x 96 preps. 4 x 96 preps.

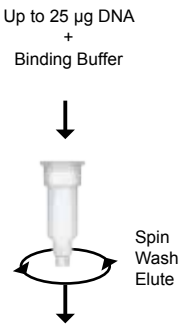
DNA Clean & Concentrator®-25

Highlights

- Quick (2 minute) desalting and recovery of ultra-pure DNA from enzymatic reactions (e.g., PCR and endonuclease digestions), cell-free lysates, etc.
- Column design allows DNA to be eluted at high concentrations into minimal volumes.

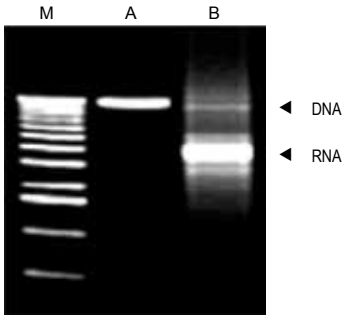
Description

The DNA Clean & Concentrator®-25 (DCC®-25) is designed for rapid desalting and purification of up to 25 µg DNA from enzymatic reactions (e.g., PCR), endonuclease digestions, or cell-free lysates. Simply add the specially formulated DNA Binding Buffer to your sample and transfer to the supplied Zymo-Spin™ column. The product features Zymo-Spin™ column technology to yield high-quality, purified DNA in just minutes, and it is compatible with cDNA and ssDNA. Eluted DNA is suitable for sequencing, microarray analysis, PCR, nucleotide blotting, and restriction endonuclease digestion procedures.



Ultra-pure DNA for...

- ✓ Sequencing
- ✓ DNA Ligation
- ✓ Endonuclease Digestion, etc.



The DNA Clean & Concentrator® yields high quality DNA for efficient transcription reactions. Lanes: M: 1 kb Marker (Zymo Research); (A) DNA template purified using the DNA Clean & Concentrator™; (B) a 7 kb RNA transcript generated *in vitro* from A.

Product	*Cat. No.*	*Size*
DNA Clean & Concentrator®-25 (uncapped)	D4005 D4006	50 preps. 200 preps.
DNA Clean & Concentrator®-25 (capped)	D4033 D4034	50 preps. 200 preps.

Use

PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 25 µl
DNA Size Limits..... 50 bp - 23 kb
Processing Time..... 2 min.

Available Formats

Zymo-Spin™ II D4005, D4006 (p. 175)

Zymo-Spin™ IIC D4033, D4034 (p. 176)

DNA Clean & Concentrator®-100

Use

PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 100 µg/prep.
Elution Volume..... ≥ 100 µl
DNA Size Limits..... 50 bp - 23 kb
Processing Time..... <20 min.

Available Format

Zymo-Spin™ V D4029, D4030 (p. 177)

Highlights

- Simple, rapid recovery of ultra-pure DNA from PCR, endonuclease digestions, and cell-free DNA preps., etc.
- Unique column construction allows sample loading and washing to be performed using a centrifuge, microcentrifuge, vacuum source, or syringe.

Description

The DNA Clean & Concentrator®-100 (DCC®-100) is designed for the rapid desalting and purification of up to 100 µg of high quality DNA from PCR, large format restriction endonuclease digestions, or cell-free lysates. Eluted DNA is suitable for nucleotide sequencing, array analysis, PCR, nucleotide blotting, restriction endonuclease digestion procedures, as well as many other downstream applications requiring high quality DNA. The entire DNA purification/concentration procedure typically takes less than 20 minutes and can be performed using a syringe, centrifuge or vacuum source together with a microcentrifuge.

Loading and ***washing*** the Zymo-Spin™ V Column can be performed using any combination of the following:

Syringe

Centrifuge

Vacuum

Elute DNA Using a Microcentrifuge

Spin
Wash
Elute

Ultra-pure DNA for...

✓ Sequencing
✓ DNA Ligation
✓ Endonuclease Digestion, etc.

Product	*Cat. No.*	*Size*
DNA Clean & Concentrator®-100	D4029 D4030	25 preps. 50 preps.

DNA Clean & Concentrator®-500

Highlights

- Simple, rapid recovery of ultra-pure DNA from PCR, endonuclease digestions, and cell-free DNA preps., etc.
- Unique column construction allows sample loading and washing to be performed using a centrifuge, microcentrifuge, vacuum source, or syringe.

Description

The DNA Clean & Concentrator®-500 (DCC®-500) is our highest capacity DNA Clean & Concentrator® product. It is designed for the rapid, large format purification and concentration of up to 500 µg of high quality DNA from samples such as large-scale restriction endonuclease digestions and crude DNA preparations. Eluted DNA is well suited for use in PCR, DNA sequencing, DNA transfection, DNA ligation, endonuclease digestion, RNA transcription, radiolabeling, etc. The entire DNA purification/concentration procedure typically takes less than 20 minutes.

Loading and ***washing*** the Zymo-Spin VI™ Column can be performed using any combination of the following methods.

Vacuum

Centrifuge

Elute DNA
Using a Centrifuge

Spin
Wash
Elute

Ultra-pure DNA for...

- ✓ Sequencing
- ✓ Transfection
- ✓ Endonuclease Digestion
- ✓ Cloning, etc.

Use

PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 500 µg/prep.
Elution Volume..... ≥ 1 ml
DNA Size Limits..... 50 bp - 23 kb
Processing Time..... 20 min.

Available Format

Zymo-Spin™ VI D4031, D4032 (p. 178)

Product	*Cat. No.*	*Size*
DNA Clean & Concentrator®-500	D4031 D4032	10 preps. 20 preps.

ZR-96 DNA Clean-up Kit™

Use

PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 30 µl
DNA Size Limits..... 50 bp - 23 kb
Processing Time..... 20 min.

Available Format

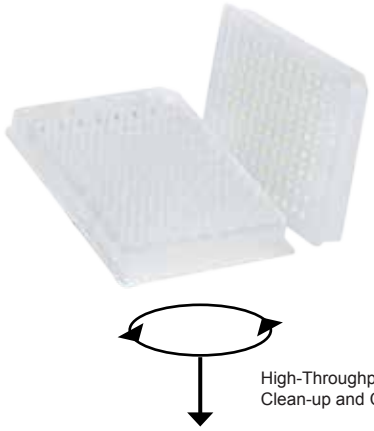
Silicon-A™ Plate D4017, 4018 (p. 182)

Highlights

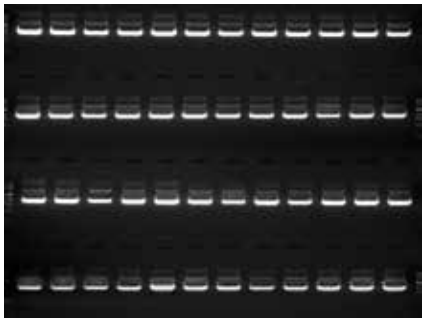
- Quick (20 minute), large-scale recovery of ultra-pure DNA from PCR, endonuclease digestions, cell-free lysates, etc.
- Eluted DNA is well suited for use in PCR, DNA sequencing, DNA ligation, endonuclease digestion, RNA transcription, radiolabeling, etc.

Description

The ZR-96 DNA Clean-up Kit™ provides for rapid, large-scale (96-well) purification and concentration of high-quality DNA from PCR samples, endonuclease digestions, or crude plasmid preparations. Simply add the specially formulated DNA Binding Buffer to your samples and transfer to the wells of the supplied Silicon-A™ Plate. There is no need for organic denaturants or chloroform. Instead, the product features Zymo-Spin™ plate technology to yield high-quality, purified DNA in just minutes.



High-Throughput DNA
Clean-up and Concentration



High-throughput DNA processing. Crude preparations of a 3 kb plasmid DNA from bacterial lysates were processed using the ZR-96 DNA Clean-up Kit™. Following elution from the plate, 48 samples were then separated in a 0.8% (w/v) agarose gel.

Product	*Cat. No.*	*Size*
ZR-96 DNA Clean-up Kit™	D4017 D4018	2 x 96 preps. 4 x 96 preps.

Oligo Clean & Concentrator™ Kits

Highlights

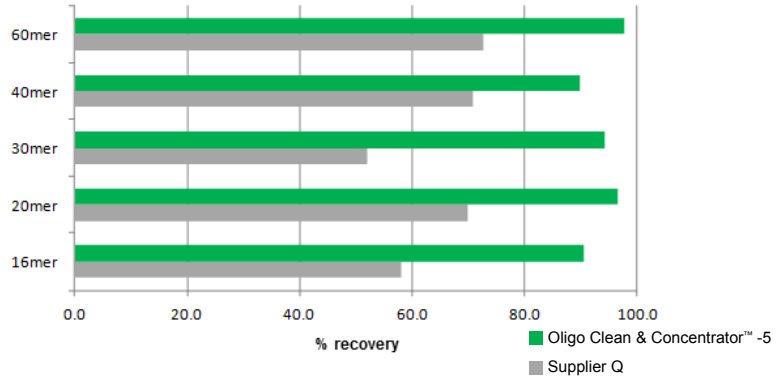
- Quick (2 minute) recovery of ultra-pure DNA and RNA oligonucleotides.
- Complete removal of dyes, salts, enzymes, nucleotides, and short oligos.
- ≥ 6 µl elution with zero retention Zymo-Spin™ columns.
- Eluted DNA/RNA is well suited for use in hybridization, sequencing, PCR, ligation, etc.

Description

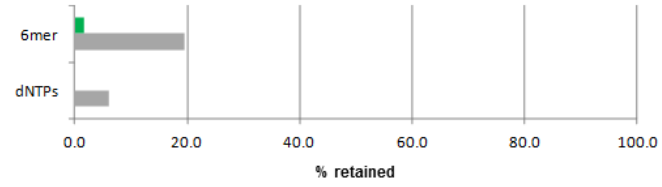
The Oligo Clean & Concentrator™ provides a streamlined method for efficient recovery and clean-up of DNA fragments and oligonucleotides ≥ 16 nt from labeling (radioactive, biotin, DIG, etc.) and other enzymatic reactions. Unincorporated nucleotides, short oligos, dyes, enzymes, and salts are effectively removed by the clean-up procedure.

There is no need for organic denaturants or chloroform. Instead, the kit features Zymo-Spin™ column technology and employs a single-buffer system that allows for efficient DNA adsorption. DNA is washed and concentrated into a small volume of water (≥ 6 µl). Purified DNA, available in just 2 minutes, is suitable for hybridization, gel shift assays, enzymatic reactions, ligation, sequencing, microarray analysis, etc.

Oligonucleotide Recovery



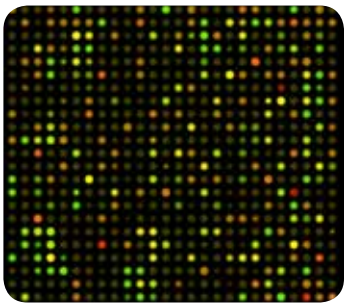
Nucleotide Retention



Product	*Cat. No.*	*Size*
Oligo Clean & Concentrator™	D4060 D4061	50 preps. 200 preps.
ZR-96 Oligo Clean & Concentrator™	D4062 D4063	2 x 96 preps. 4 x 96 preps.

Use

Oligonucleotide Clean-up..... ✓
cDNA/ssDNA Purification..... ✓
Probe Purification..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓



Specifications

Binding Capacity:
.....10 µg ssDNA/RNA
.....5 µg dsDNA

Size Limit.....≥ 16 nt

Oligo Clean & Concentrator™
Format..... Spin Column
Elution Volume..... ≥ 6 µl
Processing Time..... 2 min.

ZR-96 Oligo Clean & Concentrator™
Format..... 96-Well
Elution Volume..... ≥ 10 µl
Processing Time..... 20 min.

Available Formats

Zymo-Spin™ IC D4060, D4061 (p. 175)

Zymo-Spin™ I-96 D4063, D4044 (p. 182)

Select-a-Size™ DNA Clean & Concentrator®

Use

Next Generation Sequencing..... ✓
Library Prep..... ✓
PCR Clean-up..... ✓
Ligation..... ✓

One size does not fit all, but one kit does...

Specifications

Format..... Spin Column
Binding Capacity..... 3 µg
Elution Volume..... ≥ 10 µl
DNA Size Limits... 50 bp to ≥ 23 kb
Processing Time..... 7 min.
Cutoffs..... ≥ 300, 200, 150, 100, 50
Double Size Selection

Available Format

Zymo-Spin™ IC-S D4080 (p. 175)

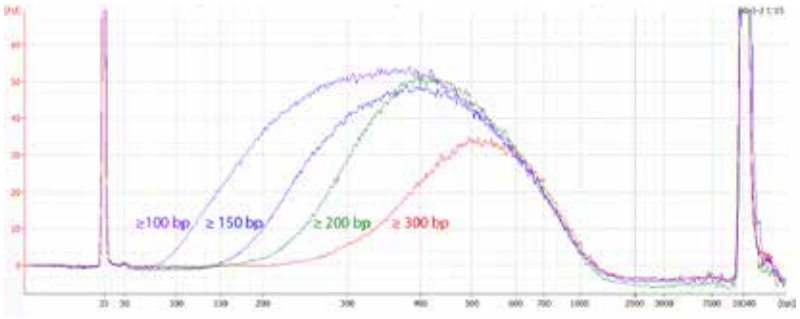
Zymo-Spin™ IIC D4080 (p. 176)

Highlights

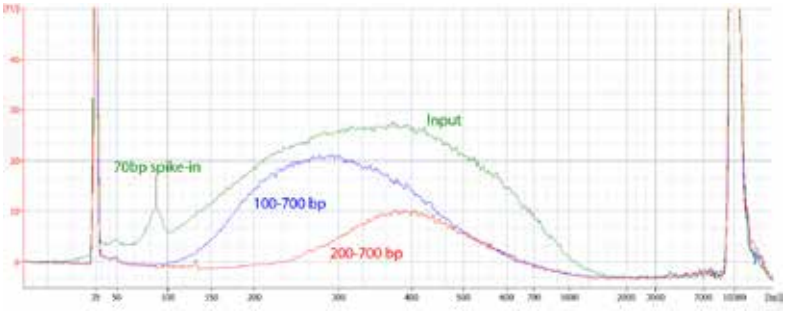
- Quick, 7 minute protocol to select for ≥300 bp, ≥200 bp, ≥150 bp, ≥100 bp, ≥50 bp DNA fragments or perform a double size selection.
- Clean and concentrate DNA from enzymatic reactions in as little as 10 µl of DNA water.
- Eluted DNA is well suited for use in next generation sequencing (NGS), PCR, DNA ligation, endonuclease digestion, RT-PCR, Chip-seq, etc.

Description

The *Select-a-Size*™ DNA Clean & Concentrator® Kit (*Select-a-Size*™ DCC®) provides the quickest and easiest method for purifying a desired range of DNA fragments sizes from PCR, endonuclease digestions, ligations, etc. Simply adjust the binding conditions for the desired cutoff, bind, wash, and elute. Selectively recover ≥300 bp, ≥200 bp, ≥150 bp, ≥100 bp, ≥50 bp DNA fragments or perform a double size selection. Unique Zymo-Spin™ column technology yields high-quality DNA in just minutes that is suitable for NGS sequencing, PCR, and other downstream applications. The entire purification procedure can be performed in as little as 7 minutes for 2 preps or 20 minutes for 24 samples.



***Select-a-Size*™ DNA Clean and Concentrator® allows for selection at ≥300 bp, ≥200 bp, ≥150 bp, ≥100 bp and ≥50 bp.** DNA was size selected according to the Select-a-Size DNA Clean and Concentrator® protocol and the results were analyzed by Bioanalyzer. 700 ng of sonicated salmon sperm DNA was used as a standard input to evaluate size selection efficiency and cutoff. Eluted DNA was diluted 1:20 prior to being loaded on the High Sensitivity DNA Chip for analysis.



***Select-a-Size*™ DCC® can be used for double size selection of samples in ranges from 50-700, 100-700, 150-700, and 200-700.** The desired DNA range was selected according to the Select-a-Size DNA Clean and Concentrator® protocol and the results were analyzed by Bioanalyzer. 700 ng of sonicated salmon sperm DNA, and a 70 bp amplicon was used as a standard input to evaluate size selection efficiency and cutoff. Eluted DNA was diluted 1:20 before loading onto the Bioanalyzer High Sensitivity DNA Chip for analysis.

Product	*Cat. No.*	*Size*
Select-a-Size™ DNA Clean & Concentrator®	D4080	25 preps.

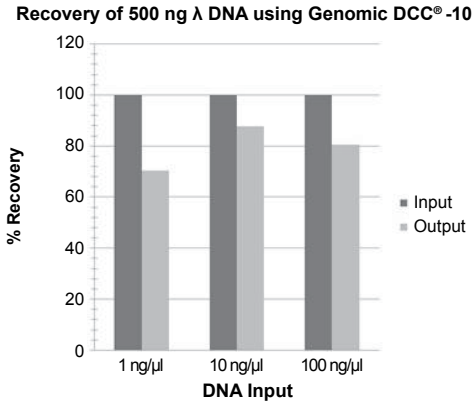
Genomic DNA Clean & Concentrator® -10

Highlights

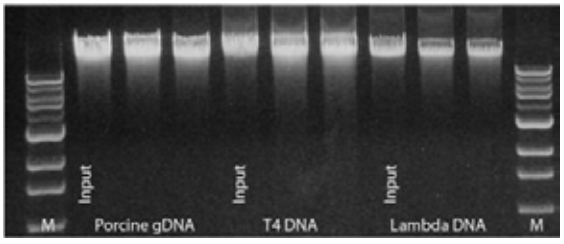
- Quick (5 minute) spin column recovery of large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga)DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). No messy precipitations!
- Unique spin column for low volume (≥35 µl) elution of ultra-pure, high-yield DNA.
- Eluted DNA is ideal for PCR, restriction endonuclease digestion, Sanger and Next-Gen sequencing, etc.

Description

The Genomic DNA Clean & Concentrator®-10 (DCC®) is for the quick (5 minute) recovery of ultra-pure, large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga)DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). There is no need for organic denaturants, chloroform, or messy precipitations: simply add the specially formulated ChIP DNA Binding Buffer to a sample and then transfer the mixture to the supplied Zymo-Spin™ Column. Eluted DNA is suitable for sequencing, PCR, endonuclease digestion, and other enzymatic procedures. The product is also compatible with smaller DNAs (50 bp to 10 kb) from PCR, digestions, crude plasmid preparations, cDNA synthesis, etc.



Lambda phage DNA (48.5 kb) is effectively recovered from various concentrations of starting material using the **Genomic DCC®.**



High molecular weight DNA is efficiently purified using the Genomic DCC®-10. Porcine gDNA (~35-50 kb), T4 phage DNA (170 kb), and lambda phage DNA (48.5 kb) were purified (in duplicate) from input material using the Genomic DCC®. Eluted DNAs were analyzed in a 0.8% (w/v) TAE/agarose/EtBr gel (shown above). The size marker "M" is a 1 kb ladder (Zymo Research).

Product	*Cat. No.*	*Size*
Genomic DNA Clean & Concentrator® -10	D4010 D4011	25 preps. 100 preps.

Use

Large-sized DNA Clean-up..... ✓
PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 10 µl
DNA Size Limits... 50 bp to ≥ 200 kb
Processing Time..... 5 min.

Available Format

Zymo-Spin™ IC-XL D4010, D4011 (p. 175)

Genomic DNA Clean & Concentrator® -25

Use

Large-sized DNA Clean-up..... ✓
PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 35 µl
DNA Size Limits... 50 bp up to 200 kb
Processing Time..... 5 min.

Available Format

Zymo-Spin™ IIC-XL D4064, D4065 (p. 176)

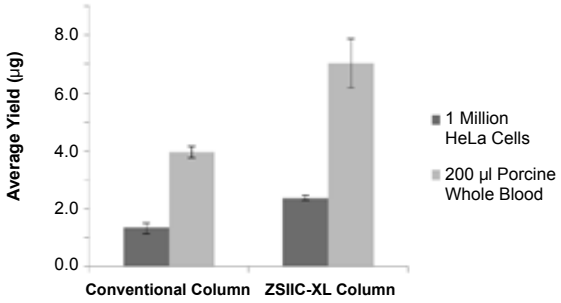
Highlights

- Quick (5 minute) spin column recovery of large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga)DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). No messy precipitations!
- Unique spin column for low volume (≥35 µl) elution of ultra-pure, high-yield DNA.
- Eluted DNA is ideal for PCR, restriction endonuclease digestion, Sanger and Next-Gen sequencing, etc.

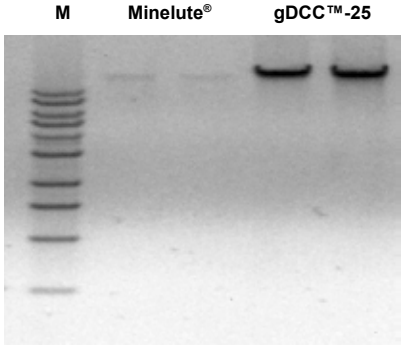
Description

The Genomic DNA Clean & Concentrator®-25 (DCC®) is for quick (5 minute) recovery of ultra-pure, large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga) DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). There is no need for organic denaturants, chloroform, or messy precipitations: simply add the specially formulated ChIP DNA Binding Buffer to a sample and then transfer the mixture to the supplied Zymo-Spin™ Column. Eluted DNA is suitable for sequencing, PCR, endonuclease digestion, and other enzymatic procedures. The product is also compatible with smaller DNAs (50 bp to 10 kb) from PCR, digestions, crude plasmid preparations, cDNA synthesis, etc.

Recovery using Zymo-Spin™ IIC-XL Columns



Zymo-Spin™ IIC-XL columns result in superior yields compared to conventional columns. Genomic DNA extracted using the Zymo-Spin™ IIC-XL Column results in higher yields from HeLa Cells and Porcine Whole Blood.



High molecular weight DNA is efficiently purified using the Genomic DCC®-25. Lambda (λ) phage DNA (48.5 kb) was purified (in duplicate) from input material using Qiagen's Minelute® and the Genomic DCC®-25 (gDCC®-25). The gDCC®-25 resulted in yields > 40% compared to the Minelute®. Eluted DNAs were analyzed in a 0.8% (w/v) TAE/agarose/EtBr gel (shown above). The size marker "M" is a 1 kb ladder (Zymo Research).

Product	*Cat. No.*	*Size*
Genomic DNA Clean & Concentrator®-25	D4064 D4065	25 preps. 100 preps.

ZR-96 Genomic DNA Clean & Concentrator® -5

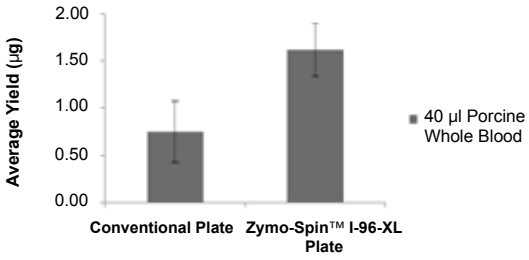
Highlights

- 96-well plate recovery of large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga)DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). No messy precipitations!
- Unique spin column for low volume (≥15 µl) elution of ultra-pure, high-yield DNA.
- Eluted DNA is ideal for PCR, restriction endonuclease digestion, Sanger and Next-Gen sequencing, etc.

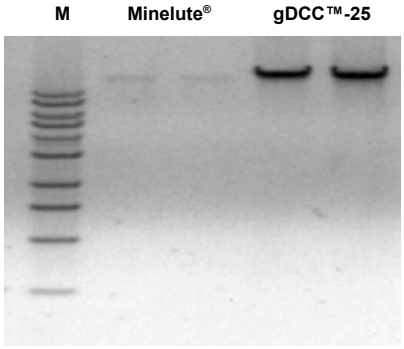
Description

The ZR-96 Genomic DNA Clean & Concentrator®-5 (DCC®) is for high throughput recovery of ultra-pure, large-sized DNA (e.g., genomic, mitochondrial, plasmid (BAC/PAC), viral, phage, (wga)DNA, etc.) from any enzymatic reaction or impure preparation (e.g., Proteinase K digestion). There is no need for organic denaturants, chloroform, or messy precipitations: simply add the specially formulated ChIP DNA Binding Buffer to a sample and then transfer the mixture to the supplied Zymo-Spin™ I-96-XL Plate. Eluted DNA is suitable for sequencing, PCR, endonuclease digestion, and other enzymatic procedures. The product is also compatible with smaller DNAs (50 bp to 10 kb) from PCR, digestions, crude plasmid preparations, cDNA synthesis, etc.

Recovery using the Zymo-Spin™ I-96-XL Plates



Zymo-Spin™ I-96-XL Plates result in superior yields to other conventional market columns. Genomic DNA extracted using the **Zymo-Spin™ I-96-XL Plate** results in higher yields from Porcine Whole Blood.



High molecular weight DNA is efficiently purified using the ZR-96 Genomic DCC®-5. Lambda (λ) phage DNA (48.5 kb) was purified (in duplicate) from input material using the Minelute® and the ZR-96 Genomic DCC™-5 (ZR-96). The ZR-96 Genomic DCC®-5 resulted in yields > 340% compared to the Minelute®. Eluted DNAs were analyzed in a 0.8% (w/v) TAE/agarose/EtBr gel (shown above). The size marker "M" is a 1 kb ladder (Zymo Research).

Product	*Cat. No.*	*Size*
ZR-96 Genomic DNA Clean & Concentrator®	D4066 D4067	2 x 96 preps. 4 x 96 preps.

Use

Large-sized DNA Clean-up..... ✓
PCR Clean-up..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
Lysate DNA Clean-up..... ✓
M13 Phage..... ✓

Specifications

Format..... 96-Well Plate
Binding Capacity..... 5 µg/well.
Elution Volume..... ≥ 15 µl
DNA Size Limits... 50 bp up to 200 kb
Processing Time..... 15 min.

Available Format

Zymo-Spin™ I-96-XL D4066, D4067 (p. 182)

ZR DNA Sequencing Clean-up Kits™

Use

Sequencing DNA Clean-up..... ✓
Dye Terminator Removal..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓

Highlights

- Complete elimination of “dye blobs” for high quality Phred scores and long read lengths.
- Flexible 6 - 20 µl elution volumes allow for direct loading of samples with no precipitation or drying steps.
- Reusable!

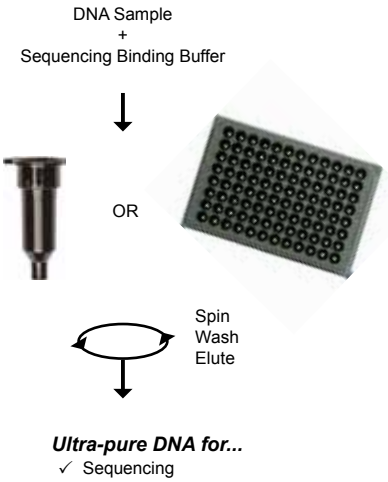
Description

The ZR DNA Sequencing Clean-up Kit™ and ZR-96 DNA Sequencing Clean-up Kit™ provide simple methods for the rapid removal of post-cycle sequencing reaction contaminants (i.e., unincorporated fluorescent dyes, residual salts, dNTPs, primers, and enzymes) from DNA extension products. These contaminants can often interfere with the quality and signal strength of sequencing data. In particular, unincorporated dyes can result in dye peaks (“dye blobs”) which may obscure portions of the sequencing chromatogram and interfere with base-calling accuracy of sequencing analysis software. DNA is eluted with a small volume of water or loading dye containing formamide. The entire DNA purification procedure typically takes about 2 minutes.

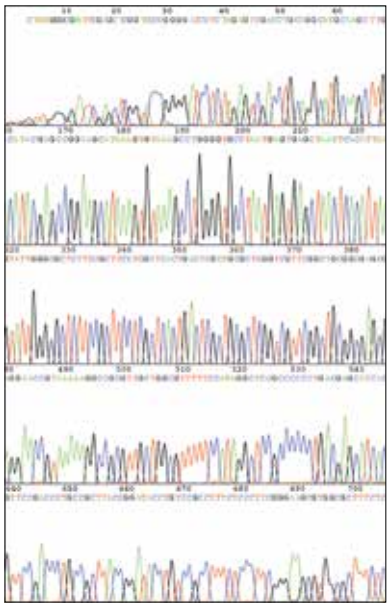
Specifications

ZR DNA Sequencing Clean-up Kit™
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 6 µl
Processing Time..... 2 min.

ZR-96 DNA Sequencing Clean-up Kit™
Format.....96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 15 µl
Processing Time..... 10 min.



Ultra-pure DNA for...
✓ Sequencing



Sequencing chromatogram of pGEM® DNA generated using an ABI 3730xl DNA analyzer. DNA was labeled with ABI BigDye® v3.1 Terminators and cleaned using the ZR DNA Sequencing Clean-up Kit™.

Available Formats

Zymo-Spin™ IB D4050, D4051 (p. 175)

Zymo-Spin™ IB-96 Plate D4052, D4053 (p. 182)

Product	*Cat. No.*	*Size*
ZR DNA Sequencing Clean-up Kit™	D4050 D4051	50 preps. 200 preps.
ZR-96 DNA Sequencing Clean-up Kit™	D4052 D4053	2 x 96 preps. 4 x 96 preps.

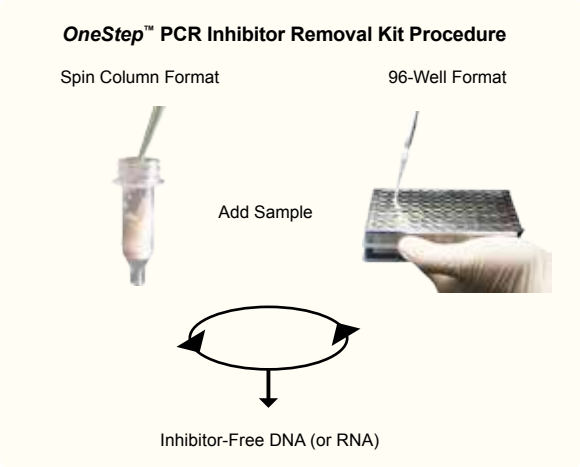
OneStep™ PCR Inhibitor Removal Kits

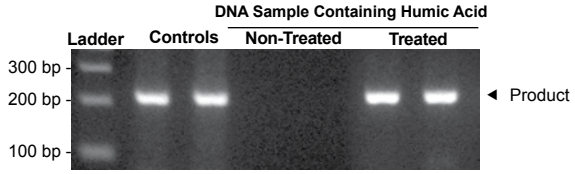
Highlights

- Removes PCR inhibitors such as polyphenolics, humic/fulvic acids, tannins, melanin, etc. from nucleic acid solutions to yield high quality DNA or RNA.
- Fast, one-step procedure for cleaning impure samples prior to PCR, sequencing, reverse transcription (RT), etc.

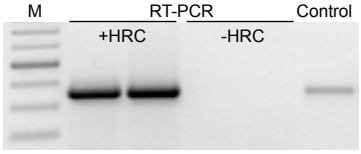
Description

The *OneStep*™ and *OneStep*™-96 PCR Inhibitor Removal Kits contain all the components needed for efficient removal of contaminants that can inhibit downstream enzymatic reactions (e.g. PCR and RT) from DNA and RNA preparations. The column/plate matrices have been specifically designed for the efficient removal of polyphenolic compounds, humic/fulvic acids, tannins, melanin, etc. from the most impure DNA and RNA preparations. Sample clean-up is as simple as applying, spinning, and recovering a sample from the column or plate.





DNA is efficiently amplified by PCR following humic acid removal with the *OneStep*™ PCR Inhibitor Removal Kit. The figure shows amplification of a 200 bp product from DNA containing humic acid that was treated with the kit. The ladder is a 100 bp DNA marker (Zymo Research).

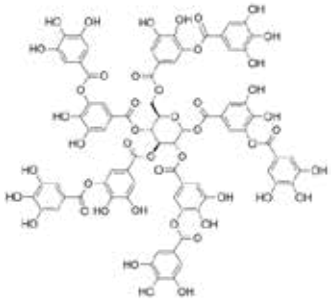


PCR amplification of an eukaryotic transcript (post-RT): Total RNA isolated from sludge with or without inclusion of the Zymo-Spin™ IV-HRC Spin Filter. M is a 1 kb DNA Marker (Zymo Research).

Product	*Cat. No.*	*Size*
OneStep™ PCR Inhibitor Removal Kit	D6030	50 preps.
OneStep™-96 PCR Inhibitor Removal Kit	D6035	2 x 96 preps.

Use

Polyphenolic PCR Inhibitor Removal from DNA..... ✓
Polyphenolic RT Inhibitor Removal from RNA..... ✓



Specifications

Binding Capacity..... Variable
DNA (RNA) Recovery..... 50 - 90%

***OneStep*™ PCR Inhibitor Removal Kit**
Format..... Spin Column
Elution Volume..... 50 - 200 µl
Processing Time..... 5 min.

***OneStep*™-96 PCR Inhibitor Removal Kit**
Format..... 96-Well
Elution Volume..... 50 - 100 µl
Processing Time..... 10 min.

Available Formats

Zymo-Spin™ IV-HRC D6030 (p. 177)

Silicon-A™ -HRC Plate D6035 (p. 182)

Zymoclean™ Gel DNA Recovery Kits

Use

DNA From Agarose Gel Slices.. ✓

Specifications

Binding Capacity..... 5 µg/prep.
DNA Size Limits..... 50 bp - 23 kb

Zymoclean™ Gel DNA Recovery
Format..... Spin Column
Elution Volume..... ≥ 6 µl
Processing Time..... 15 min.

ZR-96 Zymoclean™ Gel DNA Recovery
Format..... 96-Well
Elution Volume..... ≥ 15 µl
Processing Time..... 20 min.

Available Formats

Zymo-Spin™ I D4001, D4002 (p. 175)

Zymo-Spin™ IC D4007, D4008 (p. 175)

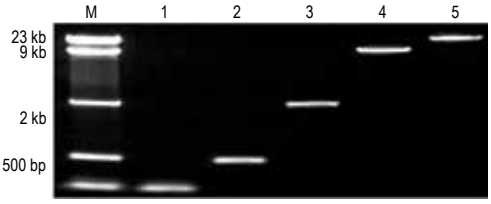
Zymo-Spin™ I-96 D4021, D4022 (p. 182)

Highlights

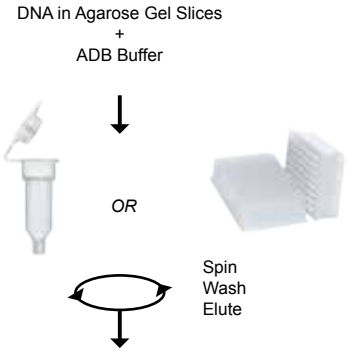
- Quick (15 minute) recovery of ultra-pure DNA from agarose gels.
- Column design permits DNA elution at high concentrations into minimal volumes (≥ 6 µl).
- Eluted DNA is well suited for use in DNA ligation, sequencing, labeling, PCR, etc.

Description

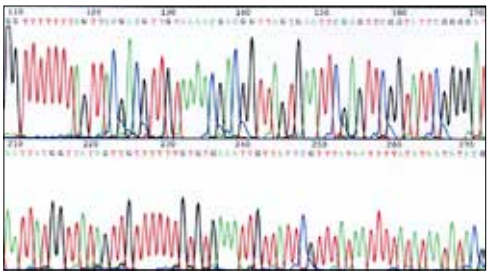
The Zymoclean™ Gel DNA Recovery and ZR-96 Zymoclean™ Gel DNA Recovery Kits provide for the rapid purification of high quality DNA from TAE/TBE-buffered agarose gels. The products feature Zymo-Spin™ technology to yield high-quality, purified DNA in just minutes. DNA purified using the Zymoclean™ Gel DNA Recovery kits is perfectly suited for use in DNA ligation reactions, sequencing, DNA labeling reactions, PCR, etc.



DNA fragments recovered from an agarose gel using the Zymoclean™ Gel DNA Recovery Kit. Lanes: M: DNA Ladder; 1-5: individual ladder DNA fragments.



Ultra-pure DNA for...
- ✓ Sequencing
- ✓ DNA Ligation
- ✓ Endonuclease Digestion, etc.



DNA sequencing chromatogram of a PCR product recovered using the Zymoclean™ Gel DNA Recovery Kit. DNA was recovered from a 2% (w/v) agarose gel and used directly for sequencing.

Product	*Cat. No.*	*Size*
Zymoclean™ Gel DNA Recovery Kit (uncapped)	D4001 D4002	50 preps. 200 preps.
Zymoclean™ Gel DNA Recovery Kit (capped)	D4007 D4008	50 preps. 200 preps.
ZR-96 Zymoclean™ Gel DNA Recovery Kit	D4021 D4022	2 x 96 preps. 4 x 96 preps.

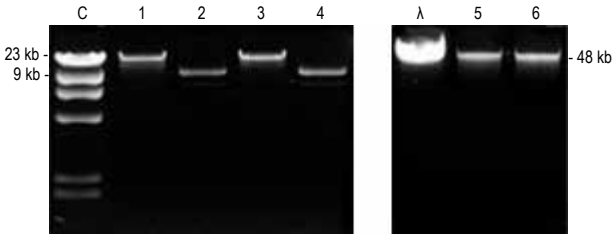
Zymoclean™ Large Fragment DNA Recovery Kit

Highlights

- Quick (15 minute) recovery of large-sized DNA (e.g., genomic, plasmid [BAC/PAC], viral, phage, etc.) from agarose gels.
- Unique column design for low volume (≥ 10 µl) elution of ultra-pure, high-yield DNA.
- Eluted DNA is well suited for use in endonuclease digestion, sequencing, labeling, PCR, etc.

Description

The Zymoclean™ Large Fragment DNA Recovery Kit provides a streamlined method for the rapid purification and concentration of high-quality large-sized DNA from agarose gels. Simply add the specially formulated Agarose Dissolving Buffer (ADB) to the gel slice containing a DNA sample, let dissolve, and then transfer to the supplied Zymo-Spin™ IC-XL Column. There is no need for organic denaturants or chloroform. Instead, the product utilizes unique spin column technology to yield high-quality, purified DNA in just minutes. DNA purified using the Zymoclean™ Large Fragment DNA Recovery Kit is ideal for PCR, sequencing, endonuclease digestion, ligation, etc. The entire procedure typically takes about 15 minutes.



Recovery of large DNA fragments. The Zymoclean™ Large Fragment DNA Recovery Kit was used to recover λ DNA digested with HindIII and separated by agarose gel electrophoresis. Lane C: λ-HindIII digest; lanes 1 & 3: recovered 23 kb λ-HindIII fragments; lanes 2 & 4: recovered 9 kb λ-HindIII fragments. Lane λ: intact λ phage DNA; lanes 5, 6: intact λ ~48 kb bands.

Use

Large-sized DNA From Agarose Gel Slices..... ✓

Specifications

Format.....Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 10 µl
DNA Size Limits.. ≥ 50 bp to ~ 200 kb
Processing Time..... 15 min.

Available Format

Zymo-Spin™ IC-XL
D4045, D4046 (p. 175)

Product	*Cat. No.*	*Size*
Zymoclean™ Large Fragment DNA Recovery Kit	D4045 D4046	25 preps. 100 preps.

Pushing the limits

of plasmid purification

Plasmid DNA purification has been around for nearly a half century, yet plasmid preparation remains unwieldy and requires time-consuming gravity filtration, centrifugation steps, and isopropanol precipitation.

Zymo Research is making history with our plasmid DNA isolation technologies. Our highly innovative portfolio of products offer streamlined workflows that result in ultra-pure, transfection-grade plasmid DNA to be isolated at superior speeds. Unique colored buffers allow for visualization of complete bacterial lysis and neutralization.

The newly developed ZymoPURE™ Plasmid kits feature state-of-the-art technology for the simplest large-scale purification of transfection-grade plasmid DNA. Streamlined methodology avoids time-consuming steps and enables highly-concentrated plasmid DNA to be eluted directly from a microcentrifuge column in 18 minutes.

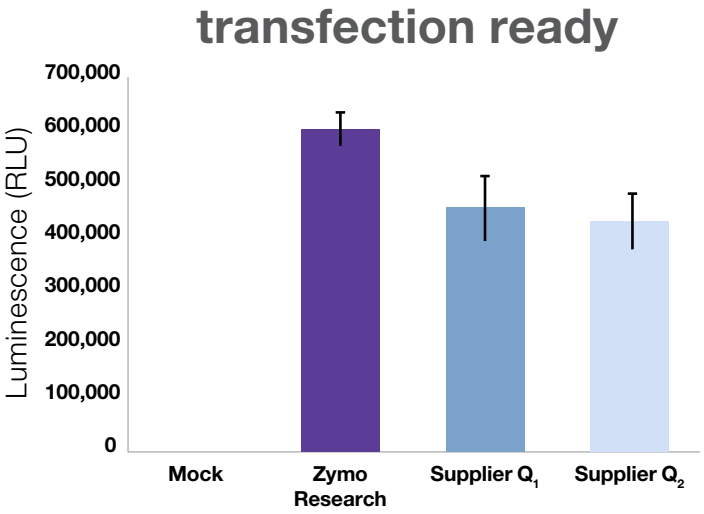
Imagine recovering plasmid DNA directly from culture. The Zyppy® Miniprep Kits allow for *in-situ* lysis and the omission of pelleting and re-suspension steps that are common to all other conventional procedures. Plasmid DNA can be isolated in only 8 minutes with our unique Zymo-Spin™ columns.

Simplify your workflow with the Zyppy®-96 Miniprep Kits that enable culturing, lysis, and neutralization using the same plate. These kits feature the fastest and simplest high-throughput and automated procedures for purifying high-quality, endotoxin-free plasmid DNA.

Transfection-ready plasmid DNA in 18 minutes

Empower your research with ZymoPURE™ large scale (Midi/Maxi/Giga) plasmid DNA purification kits. Streamlined methodology and superior technology enables unrivaled speed and performance. Innovative binding technology allows for DNA to be purified using a microcentrifuge column via vacuum or centrifuge in as little as 18 minutes. Ultra-pure transfection-grade plasmid DNA is eluted directly from the spin column into a 1.5 ml microcentrifuge tube and is ready for sensitive downstream applications.

Streamlined Workflow



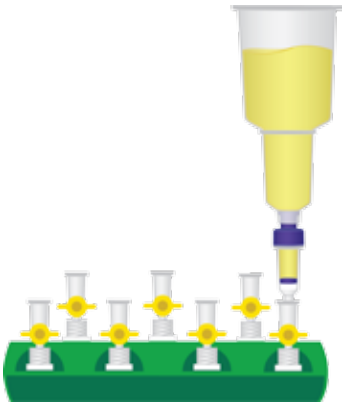
Transfection efficiency for plasmid DNA isolated using the ZymoPURE™ Maxiprep kit compared to two separate kits from Supplier Q. Plasmid DNA (pGL3®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate). HeLa cells cultured in a 96-well plate were transfected with 100 ng of pGL3® Luciferase Reporter Vector using Lipofectamine® 2000 and luciferase expression was measured 48 hours later with the ONE-Glo™ Luciferase Assay System and Veritas™ Microplate Luminometer. Shown are means ± SEM of 8 transfections.

Plasmid DNA concentration and yield from the ZymoPURE™ Maxiprep kit compared to two separate kits from supplier Q. Plasmid DNA (pGL3®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate). One (1) µl of eluted plasmid DNA was visualized post agarose gel electrophoresis. M, ZR 1 kb DNA Marker (Zymo Research).

ZymoPURE™ Plasmid Midiprep Kit

Use

Plasmid Recovery from *E. coli* culture..... ✓



Specifications

Format..... Spin Column
Vacuum Manifold or Centrifugation
Processing..... ✓
Colored Buffers..... ✓
Volume of *E. coli* culture..... 50 ml
Recovery Volume..... ≥ 100 µl
Endotoxin-Free..... ✓
Processing Time..... 18 min.

DNA Yield.....,.....≤ 300 µg/prep.
DNA Size Limits..... ≤ 25 kb

Available Format

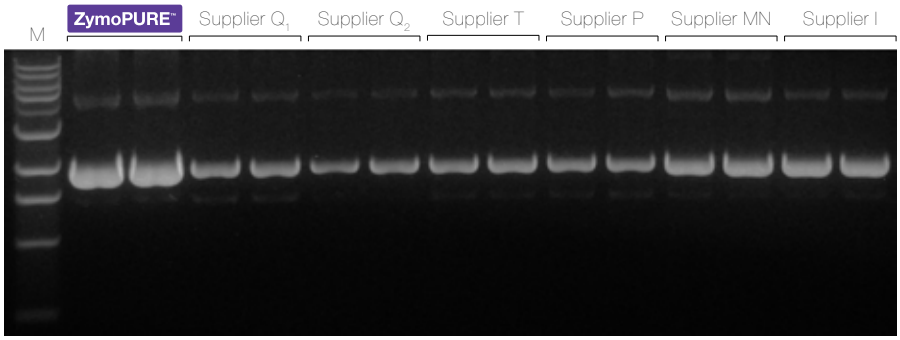
Zymo-Spin™ III-P
D4200, D4201 (p. 178)

Highlights

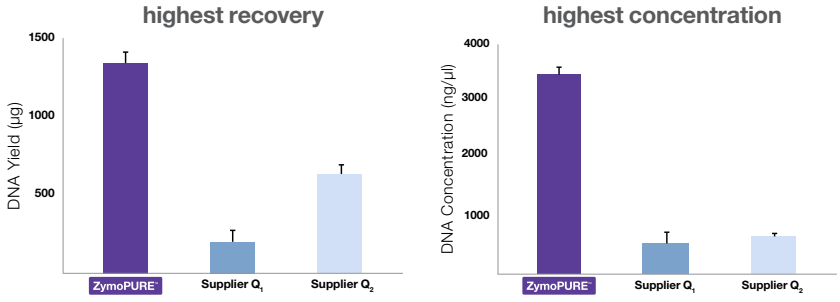
- The fastest, easiest, most reliable method for purification of ultra-pure endotoxin-free plasmid DNA.
- Innovative ZymoPURE™ binding technology enables elution of the highest concentration of plasmid DNA directly from a spin-column using a microcentrifuge.
- Routinely recover ≥ 1 µg/µl plasmid DNA that is ideal for transfection and other sensitive downstream applications.

Description

The ZymoPURE™ Plasmid Midiprep Kit features a spin-column based method for the purification of up to 300 µg of high-quality plasmid DNA in less than 20 minutes. The eluted plasmid DNA is ready for immediate use, avoiding the need for subsequent precipitation steps. ZymoPURE™ technology uses a modified alkaline lysis method and features novel binding chemistry that yields highly concentrated plasmid DNA (up to 3 µg/µl).
In addition, the wash regimen has been optimized to ensure the plasmid DNA is free of endotoxins, salt, protein, and RNA. The result is plasmid DNA suitable for transfection, restriction endonuclease digestion, bacterial transformation, PCR amplification, DNA sequencing, and other sensitive downstream applications. As an added convenience, the ZymoPURE™ Plasmid Midiprep contains colored buffers that permit error-free visualization and identification of complete bacterial cell lysis and neutralization.



Plasmid DNA yield and concentration from the ZymoPURE™ Maxiprep kit compared to other major suppliers. Plasmid DNA (pGEM®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate). One (1) µl of eluted plasmid DNA was visualized post agarose gel electrophoresis. M, ZR 1 kb DNA Marker (Zymo Research).



Yield and concentration for plasmid DNA isolated using the ZymoPURE™ Maxiprep kit compared to two separate kits from Supplier Q. Plasmid DNA (pGL3®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate).

Product	*Cat. No.*	*Size*
ZymoPURE™ Plasmid Midiprep Kit	D4200 D4201	25 preps. 50 preps.

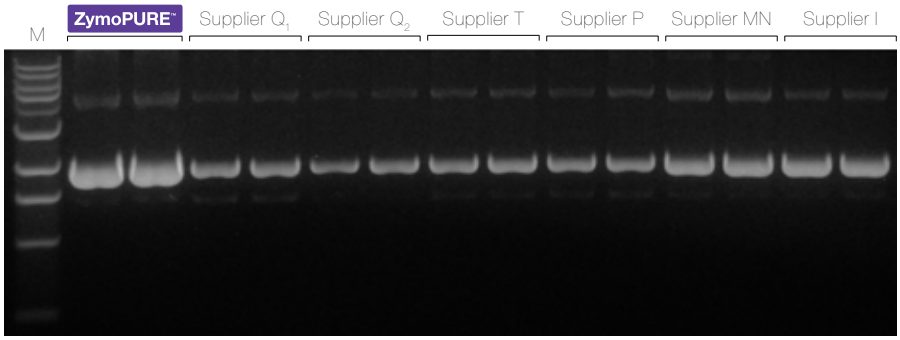
ZymoPURE™ Plasmid Maxiprep Kit

Highlights

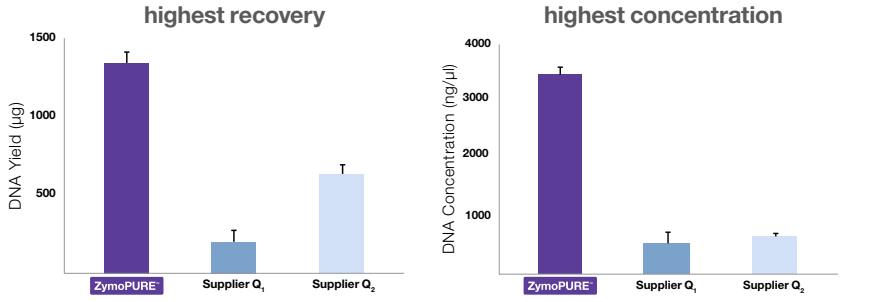
- The fastest spin-column based procedure for purifying up to 1.2 mg of ultra-pure endotoxin-free transfection-grade plasmid DNA.
- Innovative ZymoPURE™ binding technology enables elution of the highest concentration of plasmid DNA directly from a spin-column using a microcentrifuge.
- Routinely recover ≥ 1 µg/µl plasmid DNA that is ideal for transfection and other sensitive downstream applications.

Description

The ZymoPURE™ Plasmid Maxiprep kit features a spin-column based method for the purification of up to 1.2 mg of high-quality plasmid DNA in less than 20 minutes. The eluted plasmid DNA is ready for immediate use, avoiding the need for subsequent precipitation steps. ZymoPURE™ technology uses a modified alkaline lysis method and features novel binding chemistry that yields highly concentrated plasmid DNA (up to 2.5 µg/µl).
In addition, the wash regimen has been optimized to ensure the plasmid DNA is free of endotoxins, salt, protein, and RNA. The result is plasmid DNA suitable for transfection, restriction endonuclease digestion, bacterial transformation, PCR amplification, DNA sequencing, and other sensitive downstream applications. As an added convenience, the ZymoPURE™ Plasmid Maxiprep contains colored buffers that permit error-free visualization and identification of complete bacterial cell lysis and neutralization.



Plasmid DNA yield and concentration from the ZymoPURE™ Maxiprep kit compared to other major suppliers. Plasmid DNA (pGEM®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate). One (1) µl of eluted plasmid DNA was visualized post agarose gel electrophoresis. M, ZR 1 kb DNA Marker (Zymo Research).

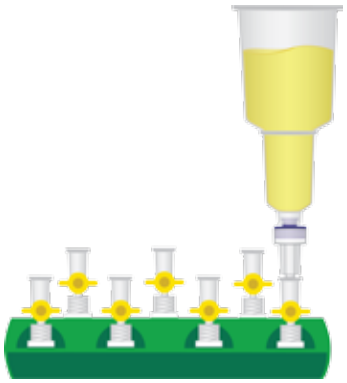


Yield and concentration for plasmid DNA isolated using the ZymoPURE™ Maxiprep kit compared to two separate kits from Supplier Q. Plasmid DNA (pGL3®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate).

Product	*Cat. No.*	*Size*
ZymoPURE™ Plasmid Maxiprep Kit	D4202 D4203	10 preps. 20 preps.

Use

Plasmid Recovery from *E. coli* culture..... ✓



Specifications

Format..... Spin Column
Vacuum Manifold or Centrifugation
Processing..... ✓
Colored Buffers..... ✓
Volume of *E. coli* culture..... 150 ml
Recovery Volume..... ≥ 200 µl
Endotoxin-Free..... ✓
Processing Time..... 18 min.

DNA Yield.....,.....≤ 1.2 mg/prep.
DNA Size Limits..... ≤ 25 kb

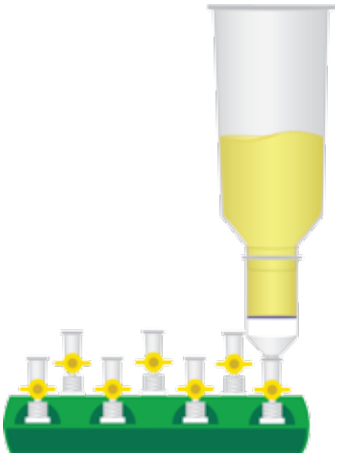
Available Format

Zymo-Spin™ V-P
D4202, D4203 (p. 178)

ZymoPURE™ Plasmid Gigaprep Kit

Use

Plasmid Recovery from *E. coli* culture..... ✓



Specifications

Format..... Spin Column
Vacuum Manifold or Centrifugation
Processing..... ✓
Colored Buffers..... ✓
Volume of *E. coli* culture..... 2.5 L
Recovery Volume..... ≥ 2 ml
Endotoxin-Free..... ✓
Processing Time..... 50 min.

DNA Yield.....,.....≤ 10 mg/prep.
DNA Size Limits..... ≤ 25 kb

Available Format

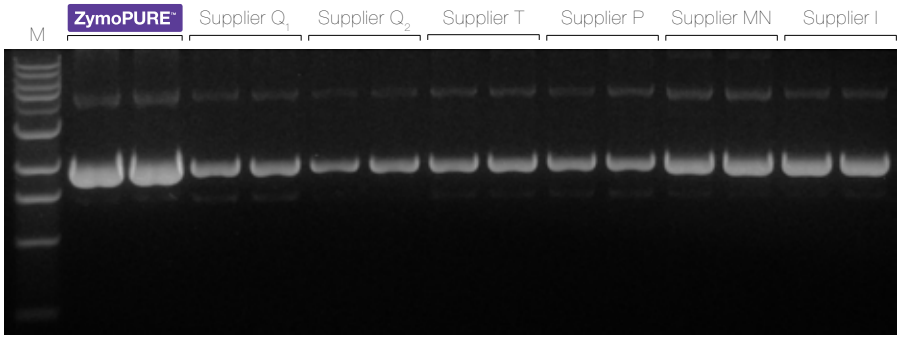
Zymo-Spin™ VI-P
D4204 (p. 178)

Highlights

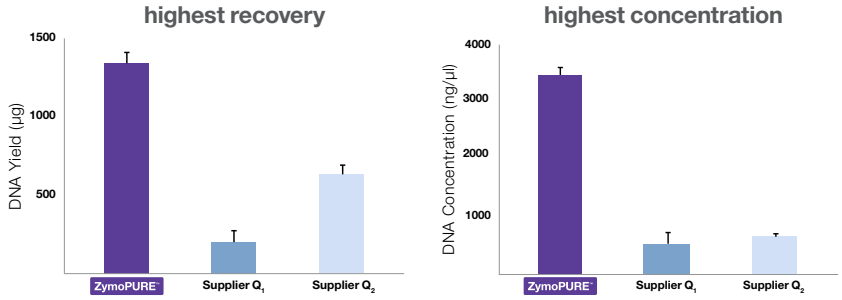
- The fastest spin-column based procedure for purifying up to 10 mg of ultra-pure endotoxin-free transfection-grade plasmid DNA.
- Innovative ZymoPURE™ binding technology enables elution of the highest concentration of plasmid DNA directly from a spin-column using a microcentrifuge.
- Routinely recover ≥ 1 µg/µl plasmid DNA that is ideal for transfection and other sensitive downstream applications.

Description

The ZymoPURE™ Plasmid Gigaprep kit features a spin-column based method for the purification of up to 10 mg of high-quality plasmid DNA in less than 50 minutes. The eluted plasmid DNA is ready for immediate use, avoiding the need for subsequent precipitation steps. ZymoPURE™ technology uses a modified alkaline lysis method and features novel binding chemistry that yields highly concentrated plasmid DNA (up to 2.5 µg/µl) directly from a spin column. The wash regimen has been optimized to ensure the plasmid DNA is free of endotoxins, salt, protein. The result is plasmid DNA suitable for transfection, restriction endonuclease digestion, bacterial transformation, PCR amplification, DNA sequencing, and other sensitive downstream applications. As an added convenience, the ZymoPURE™ Plasmid Gigaprep contains colored buffers that permit error-free visualization and identification of complete bacterial cell lysis and neutralization.



Plasmid DNA yield and concentration from the ZymoPURE™ Maxiprep kit compared to other major suppliers. Plasmid DNA (pGEM®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate). One (1) µl of eluted plasmid DNA was visualized post agarose gel electrophoresis. M, ZR 1 kb DNA Marker (Zymo Research).



Yield and concentration for plasmid DNA isolated using the ZymoPURE™ Maxiprep kit compared to two separate kits from Supplier Q. Plasmid DNA (pGL3®) was isolated from 150 ml of JM109 *E. coli* culture grown overnight following the manufacturer's suggested protocol (in duplicate).

Product	*Cat. No.*	*Size*
ZymoPURE™ Plasmid Gigaprep Kit	D4204	5 preps.

High-quality plasmid DNA in 8 minutes

1. Add lysis buffer **directly** to bacterial culture

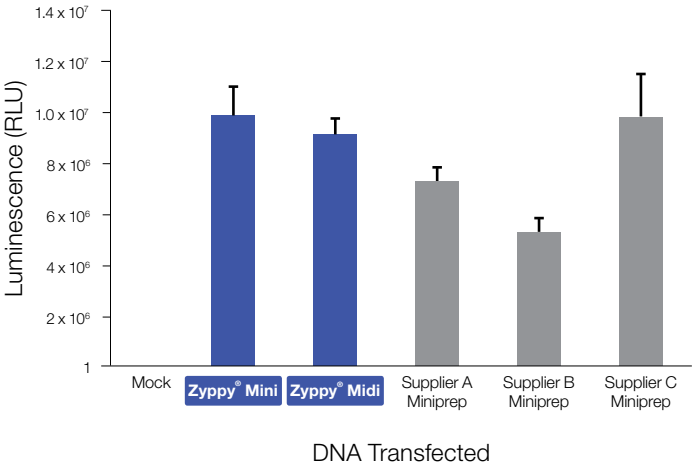
2. Neutralize

3. Bind, Wash, Elute

ready for cloning, sequencing, and transfection

Plasmid DNA isolation directly from culture

The Zyppy® Plasmid Miniprep Kit features a pellet-free modified alkaline lysis method that bypasses bacterial culture centrifugation and resuspension steps common to classical plasmid preparation procedures. Simply add the uniquely formulated 7X Lysis Buffer directly to your bacterial culture, neutralize, and then purify using the provided Zymo-Spin™ column technology. Additionally, the innovative colored buffers included in the kit permit error-free visualization and identification of complete bacterial cell lysis and neutralization. The plasmid DNA is of the highest quality and ready for sensitive downstream applications.

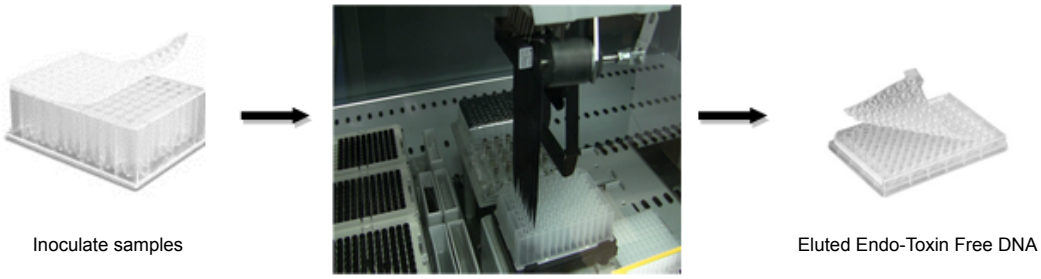


Luciferase activity in transfected cells. Lysates from cells transfected with plasmid DNA extracted using the pellet-free (Zyppy® system) and non-pellet-free (suppliers A, B, and C) formats were used to measure luciferase activity. The activity is indicated as relative light units (RLU).

High-throughput and Automated Plasmid DNA Purification

The Zyppy® Pellet-Free procedure from Zymo Research allows for fully automated, high-throughput plasmid purification. No centrifugation or re-suspension steps common to all other conventional procedures are required. The kit features a modified alkaline lysis system that allows for the direct lysis of *E.coli* in the growth medium. With Zyppy®'s easy, pellet-free procedure, you can grow, lyse, and process samples in the same plate with no manual manipulation.

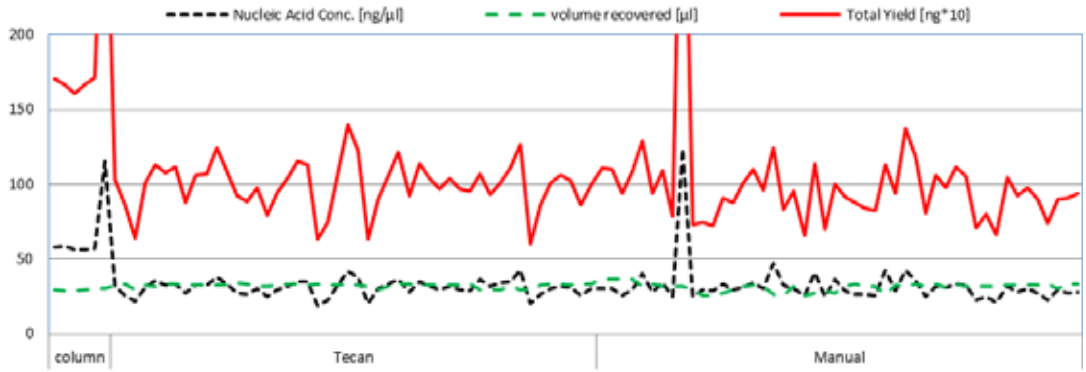
Samples grown overnight in a 96-Well Block are transferred to an automated liquid handler (e.g., Tecan – Freedom Evo®).The uniquely formulated Deep Blue Lysis Buffer is added directly to bacterial cultures in each well. After neutralization, lysate separation steps are expedited using non-DNA binding MagClearing Beads to pull down cellular debris. The cleared lysates are then automatically transferred to another plate and MagBinding Beads are added to the cleared lysate and the DNA-bound beads are washed and dried. Once eluted, plasmid DNA is ready for immediate use, or can be stored at -20°C for later use.



Inoculate samples

Process

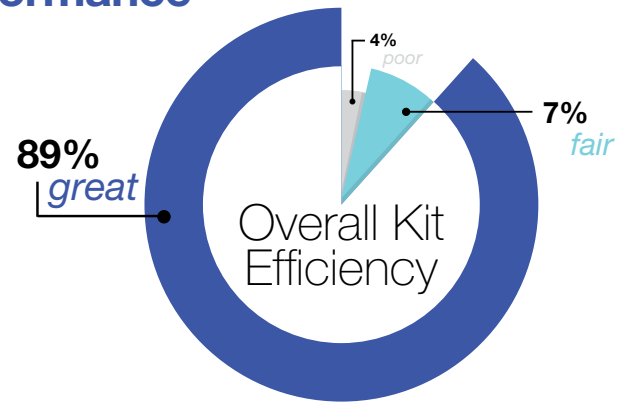
Eluted Endo-Toxin Free DNA



Comparison between Manual and Automated Processing. Data shows concentration, recovery volume and total yield for samples processed across a 96-well plate as well as on single spin columns. Half of the plate samples were processed manually, the other half was processed using the Tecan – Freedom EVO®. Plasmid DNA was purified from *E.coli* cells grown at 37°C overnight.

Proven Performance

would recommend
this kit to another researcher



based on feedback from 384 researchers

Zyppy® Plasmid Miniprep Kits

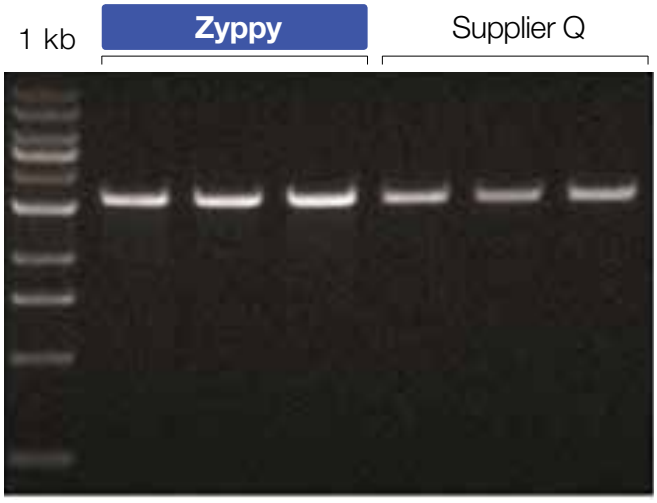
Highlights

- The fastest, easiest miniprep available for purifying transfection quality plasmid DNA.
- Pellet-free procedure omits conventional cell pelleting and resuspension steps.
- DNA quality appropriate for cloning, sequencing, and transfection.

Description

The Zyppy® Plasmid Miniprep Kit features a pellet-free modified alkaline lysis method that bypasses bacterial culture centrifugation and resuspension steps common to classical plasmid preparation procedures. Simply add the uniquely formulated 7X Lysis Buffer directly to your bacterial culture, neutralize, and then purify using the provided Zymo-Spin™ column technology. Additionally, the innovative colored buffers included in the kit permit error-free visualization and identification of complete bacterial cell lysis and neutralization.

The Zyppy® Plasmid Miniprep Kit is the fastest and easiest method available to separate plasmid DNA from *E. coli* efficiently. The plasmid DNA is of the highest quality, endotoxin-free, and is well suited for use in transfection, bacterial transformation, restriction endonuclease digestion, DNA ligation, PCR, transcription, sequencing, and other sensitive downstream applications.



EcoRI digestion of plasmid DNA (pGEM®) isolated from *E. coli* culture using the Zyppy® Plasmid Miniprep Kit or the QIAprep™ Spin Miniprep kit from Qiagen. The amount of DNA loaded was standardized based on culture volume input. Performed in triplicate.

Product	*Cat. No.*	*Size*
Zyppy® Plasmid Miniprep Kit	D4036	50 preps.
	D4019	100 preps.
	D4020	400 preps.
	D4037	800 preps.

Use

Plasmid Recovery Directly from *E. coli* culture..... ✓

Specifications

Pellet-Free, Direct Culture Input.... ✓
Colored Buffers..... ✓
Endotoxin-Free..... ✓

Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 30 µl
Culture Input..... 600 µl - 3 ml
Typical Yield (high copy plasmid):
.....2 - 15 µg
DNA Size Limits..... ≤ 25 kb
Processing Time..... 8 min.

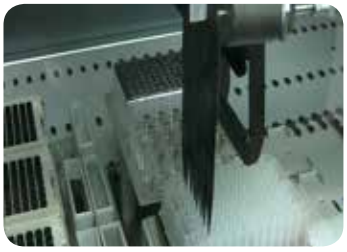
Available Format

Zymo-Spin™ IIN D4036, D4019, D4020, D4037 (p. 176)

Zyppy®-96 Plasmid Miniprep Kits

Use

Plasmid Recovery Directly from *E. coli* culture..... ✓



Specifications

Pellet-Free, Direct Culture Input.... ✓
Colored Buffers..... ✓
Endotoxin-Free..... ✓

Culture Input..... 750 µl
Typical Yield (high copy plasmid):
..... 2 - 10 µg
DNA Size Limits..... ≤ 25 kb
Automation Ready!

Zyppy®-96 Plasmid MiniPrep
Format..... 96-Well
Binding Capacity..... 10 µg/prep.
Elution Volume... ≥ 30 µl per well
Processing Time..... 45 min.

Zyppy®-96 Plasmid MagBead MiniPrep
Format..... Magnetic Beads
Binding Capacity..... 10µg/prep.
Elution Volume... ≥ 30 µl per well
Processing Time..... 60 min.

Available Formats

Zymo-Spin™ I-96 D4041, D4042, D4043 (p. 182)

MagBinding Beads D4100, D4101, D4102 (p. 181)

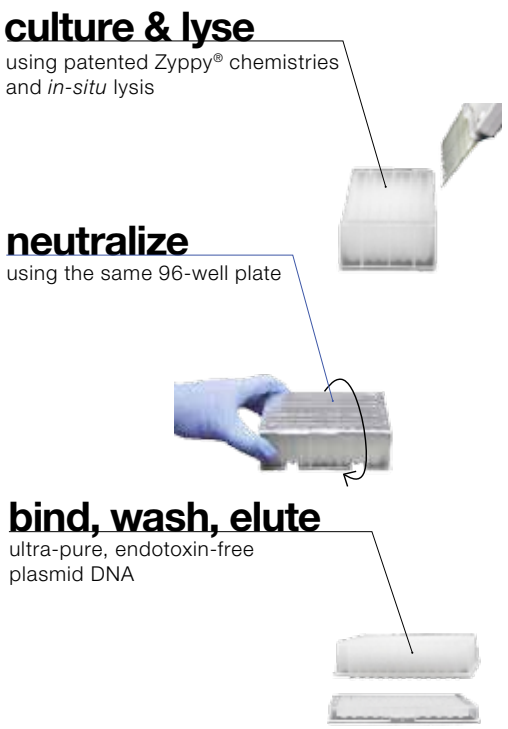
Highlights

- The fastest and simplest high-throughput procedures for purifying high-quality plasmid DNA.
- Innovative pellet-free procedures and in-situ lysis omits cell pelleting and resuspension steps.
- Culture, lyse, and neutralize in the same plate, saving time and reducing plastic waste.

Description

Simplify your workflow with the Zyppy®-96 Plasmid Miniprep Kits! The Zyppy® Pellet-Free procedure from Zymo Research allows for high-throughput and fully automated methods for plasmid purification. With Zyppy's™ easy, pellet-free procedure, the same plate is used to culture, lyse, and neutralize samples. By using the same plate, the Zyppy®-96 Plasmid Miniprep Kits save time and reduce the amount of plastic waste. In-situ lysis allows for the omission of pelleting and resuspension steps that are common to all other conventional procedures. After the neutralization step, simply bind, wash, and elute high-quality plasmid DNA utilizing our Zymo-Spin™ 96-well plate. Once eluted, endotoxin-free plasmid DNA is ready for immediate use in all sensitive downstream applications. Using an automated platform? Zymo Research's magnetic beads and Zyppy® Technology makes automating plasmid DNA isolation simple.

Simplified 96-well plasmid workflow
in-situ culturing-lysis-neutralization



Product	*Cat. No.*	*Size*
Zyppy®-96 Plasmid Miniprep	D4041	2 x 96 preps.
	D4042	4 x 96 preps.
	D4043	8 x 96 preps.
Zyppy®-96 Plasmid MagBead Miniprep	D4100	2 x 96 preps.
	D4101	4 x 96 preps.
	D4102	8 x 96 preps.

Zyppy® Plasmid Midiprep Kit

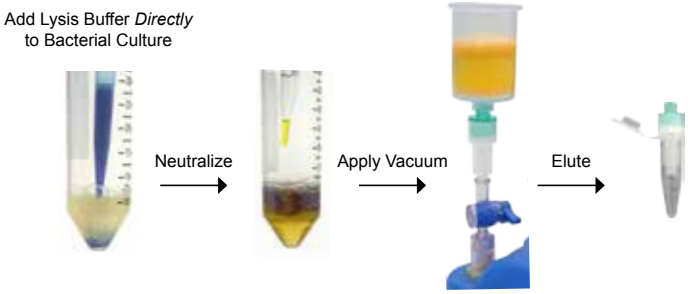
Highlights

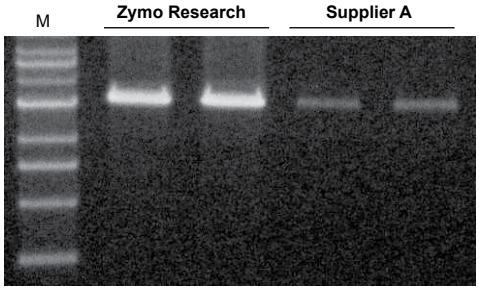
- The fastest, simplest midiprep available for purifying transfection quality plasmid DNA.
- Pellet-free procedure omits conventional cell pelleting and resuspension steps.
- DNA quality appropriate for cloning, sequencing, and transfection.

Description

The Zyppy® Plasmid Midiprep Kit is a large-scale (up to 120 µg DNA) version of the Zyppy® Plasmid Miniprep Kit. It features a pellet-free modified alkaline lysis method that bypasses bacterial culture centrifugation and resuspension steps common to classical plasmid preparation procedures. Simply add the uniquely formulated 7X Lysis Buffer directly to your bacterial culture, neutralize, and then purify using our Zymo-Spin™ column technology. Additionally, the innovative colored buffers permit error-free visualization and identification of complete bacterial cell lysis and neutralization.

The Zyppy® Plasmid Midiprep Kit is the fastest and simplest method available to separate plasmid DNA from *E. coli* efficiently. The plasmid DNA is of the highest quality, is endotoxin-free, and is well suited for use in transfection, bacterial transformation, restriction endonuclease digestion, DNA ligation, PCR, transcription, sequencing, and other sensitive downstream applications.





DNA yield from Zyppy® Plasmid Midiprep Kit and a kit from Supplier A. EcoRI digestion of plasmid DNA (pGEM®) isolated from a 6 ml *E. coli* culture using the Zyppy® Plasmid Midiprep Kit or a kit from Supplier A. Performed in duplicate. M, ZR 1 kb DNA Marker (Zymo Research).

Product	*Cat. No.*	*Size*
Zyppy® Plasmid Midiprep Kit	D4025 D4026	25 preps. 50 preps.

Use

Plasmid Recovery Directly from *E. coli* culture..... ✓

Specifications

Pellet-Free, Direct Culture Input... ✓
Colored Buffers..... ✓
Endotoxin-Free..... ✓

Binding Capacity..... 120 µg/prep.
Elution Volume..... ≥ 150 µl
Culture Input..... 6 ml - 35 ml
Typical Yield (high copy plasmid):
..... 20 - 80 µg
DNA Size Limits..... ≤ 25 kb
Processing Time..... 15 min.

Available Format

Zymo-Spin™ V-E D4025, D4026 (p. 177)

ZR Plasmid Miniprep™-*Classic*

Use

Plasmid Recovery from *E. coli*... ✓

Specifications

Colored Buffers..... ✓
Endotoxin-Free..... ✓

Format..... Spin Column
Culture Input..... 0.5 - 5.0 ml
Binding Capacity..... 25 µg/prep.
Processing Time..... 15 min.
Elution Volume..... ≥ 30 µl
DNA Size Limits..... ≤ 25 kb

Available Format

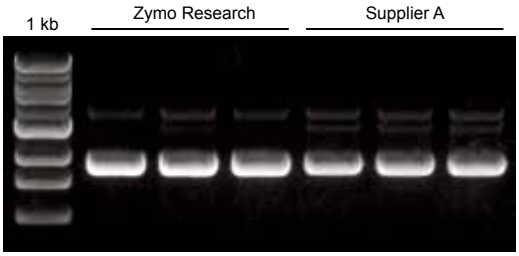
Zymo-Spin™ IIN D4015, D4016, D4054 (p. 176)

Highlights

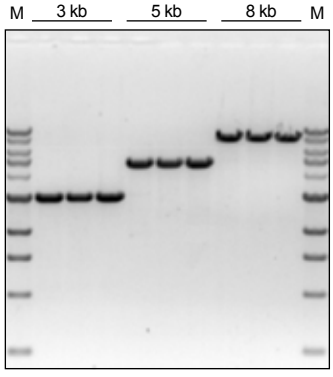
- For purification of high quality, endotoxin-free plasmid DNA for restriction endonuclease digestion, DNA sequencing, transformation, cloning, transfection, *in vitro* transcription reactions, etc.
- Innovative colored P1, P2, and P3 buffers for rapid identification of complete bacterial cell lysis and neutralization steps.
- Unique column design: zero buffer retention and low (30 µl) elution volume.

Description

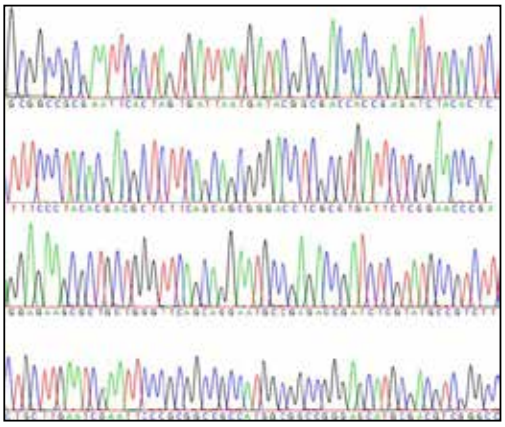
The ZR Plasmid Miniprep™-*Classic* is designed for efficient isolation of plasmid DNA from *E. coli* using a traditional 3-buffer (P1, P2, P3) procedure that is simple, rapid, user-friendly, and reliable. It features a modified alkaline lysis protocol together with a unique Zymo-Spin™ column to yield high quality plasmid DNA in minutes. The buffers are color-coded (red, green, yellow) for easy determination of complete cell lysis and neutralization. The innovative Zymo-Spin™ IIN columns yield endotoxin-free plasmid DNA. Plasmid DNA purified using the ZR Plasmid Miniprep™-*Classic* is well suited for use in restriction endonuclease digestion, sequencing, DNA ligation, cloning, PCR, bacterial transformation, transfection, etc.



	ng/µl	A_{260}	$A_{260/280}$
Zymo Research's *Classic*	94.0	1.9	1.7
	75.3	1.5	1.9
	66.4	1.3	1.9
Supplier A	72.8	1.5	1.8
	77.5	1.6	1.8
	60.4	1.2	1.9



Plasmid products. Restriction Endonuclease digestion of three different plasmids prepared using the ZR Plasmid Miniprep™-*Classic*, performed in triplicate. M: ZR 1 kb DNA marker (Zymo Research).



Sequence-quality DNA preparations. DNA sequencing chromatogram of plasmid DNA prepared using the ZR Plasmid Miniprep™-Classic.

Product	*Cat. No.*	*Size*
ZR Plasmid Miniprep™-*Classic*	D4015	100 preps.
	D4016	400 preps.
	D4054	800 preps.

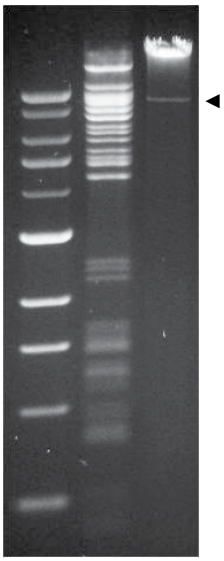
ZR BAC DNA Miniprep Kit

Highlights

- For spin column purification of endotoxin-free BAC/PAC plasmid DNA (up to ~200 kb) for sequencing, PCR, restriction endonuclease digestion, etc.
- Innovative colored buffers for rapid identification of complete bacterial cell lysis and neutralization steps.
- Unique column design: zero buffer retention and low-volume (≥ 10 µl) elution.

Description

The ZR BAC DNA Miniprep Kit is for the efficient isolation of BAC plasmid DNA or other large plasmids (e.g., PAC) from *E. coli* using a procedure that is simple, rapid, user-friendly, and reliable. It features a modified alkaline lysis protocol with color-coded reagents that allow easy visualization and assessment of complete bacterial cell lysis and neutralization. The innovative Zymo-Spin™ IC-XL columns are optimized for high yield endotoxin-free plasmid DNA recovery. BAC DNA purified using the ZR BAC DNA Miniprep Kit is ideal for sequencing, PCR, endonuclease digestion, etc.



HindIII and NotI digestion of BAC DNA. A BAC (~160 kb) from a RPCI-11 human BAC library (CHORI) was purified from DH10B cells (Invitrogen) using the ZR BAC DNA Miniprep Kit. Digestion with NotI removed the ~148 kb insert from the 11.6 kb pBACe3.6 cloning vector 1 (◀). M: 1 kb DNA ladder (Zymo Research).

Product	*Cat. No.*	*Size*
ZR BAC DNA Miniprep Kit	D4048 D4049	25 preps. 100 preps.

Use

Large Plasmid Recovery from *E. coli*..... ✓

Specifications

Colored Buffers..... ✓
Endotoxin-Free..... ✓

Format.....Spin Column
Culture Input.....0.5-5.0 ml
Binding Capacity.....10 µg/prep.
Elution Volume.....≥10 µl
Processing Time.....15 min.
DNA Size Limits....50 bp to ≥200 kb

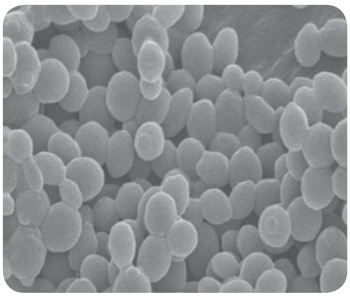
Available Format

Zymo-Spin™ IC-XL D4048, D4049 (p. 175)

Zymoprep™ Yeast Plasmid Miniprep Kits

Use

Plasmid Recovery From Yeast..... ✓

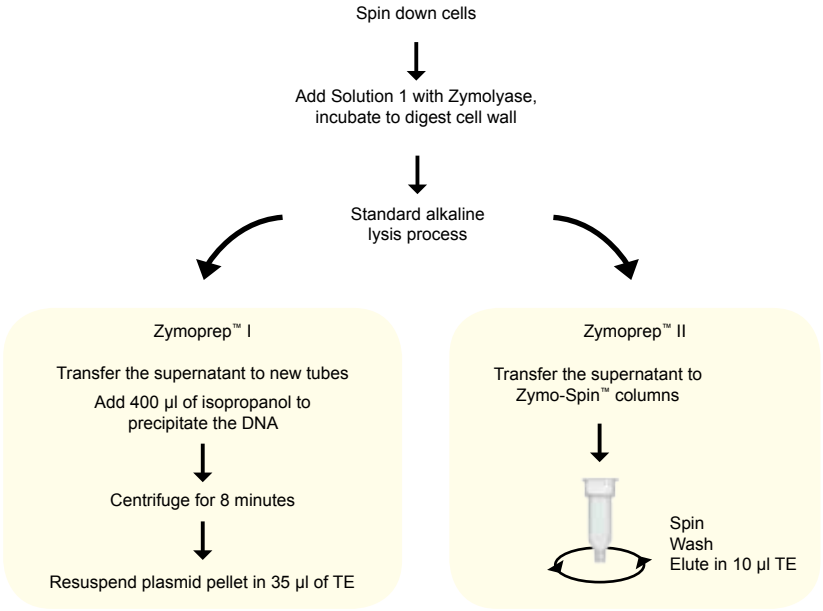


- Simple procedures for plasmid rescue from yeast.
- Ideal for low-copy and hard-to-isolate plasmids.
- For isolation of plasmid DNA for downstream applications such as PCR, transformation, hybridization, etc.

Description

The Zymoprep™ Yeast Plasmid Miniprep provides all the necessary reagents for plasmid isolation from *S. cerevisiae*, *C. albicans* and *S. pombe*, and any fungi whose cell walls are susceptible to yeast lytic enzyme lysis. The procedure is simple and efficient, and there is no need for glass beads or phenol. Reliably recover plasmid DNA from yeast colonies, patches on plates, or as liquid cultures. The system is ideal for low-copy number and hard to isolate plasmids. Eluted plasmid DNA can be used directly for *E. coli* transformation, PCR, and Southern blot analysis.

Procedure for Zymoprep™ Yeast Plasmid Miniprep I & II



Specifications

Processing Time..... 35 - 90 min.
DNA Size Limits..... ≤ 23 kb

Zymoprep™ Yeast Plasmid Miniprep Kit I

Format..... Isopropanol Precipitation
Elution Volume..... ≥ 35 µl

Zymoprep™ Yeast Plasmid Miniprep Kit II

Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl

Available Formats

Isopropenol Precipitation (D2001)

Zymo-Spin™ I D2004 (p. 175)

Product	*Cat. No.*	*Size*
Zymoprep™ Yeast Plasmid Miniprep I	D2001	100 preps.
Zymoprep™ Yeast Plasmid Miniprep II	D2004	50 preps.

High Quality DNA from Biological Liquids, Cells, and Tissues

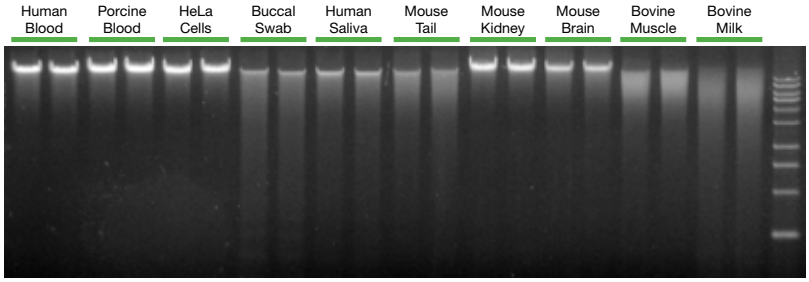
Zymo Research offers a range of genomic DNA isolation kits (pp. 88-105) that are suitable for extracting high molecular weight DNA from a wide variety of sample types including tissue, fresh and paraffin-embedded tissue sections, cultured cells, saliva, buccal cells, whole blood, plasma, serum, urine, bacteria, fungi, yeast, algae, viruses, and mitochondria. Our genomic DNA isolation kits yield high quality dsDNA that is ideal for use in downstream applications such as PCR, Southern blotting, endonuclease digestion, and methylation detection. Like our DNA clean-up kits, most of our genomic DNA isolation kits feature Zymo-Spin™ technology which allows for minimal elution volumes and high DNA concentrations.

Quick-DNA™ Universal Kit

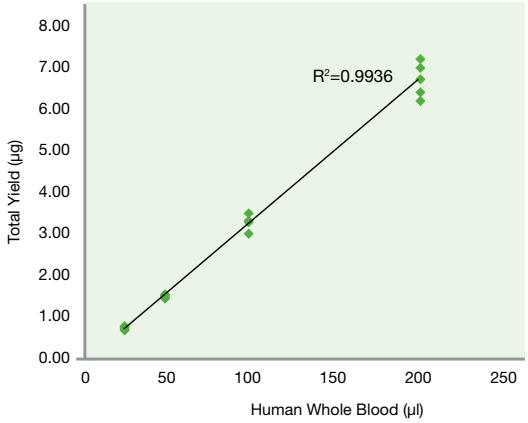
Quick™ Technology Overview

The *Quick*-DNA™ Universal Kits provide the simplest method available for high yield total DNA extraction (e.g., genomic, plasmid, mitochondrial, viral) from any biological fluid, cell culture, or solid tissue sample. *Quick*™ technology ensures the fastest isolation of ultra-pure DNA utilizing a streamlined workflow optimized for your preferred sample type. This product features a novel spin-column capable of effectively eluting high molecular weight DNA in as little as 35 µl for ultra-pure, highly concentrated DNA that is immediately ready for any sensitive downstream application.

High-quality DNA from any sample



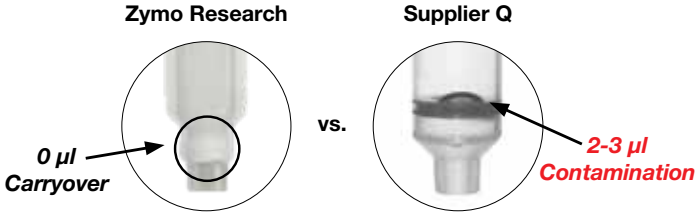
High Quality DNA Obtained from a Wide Range of Biological Samples Using the *Quick*-DNA™ Universal Kit. DNA purified using the *Quick*-DNA™ Universal Kit is ultra-pure, highly concentrated, and ready for all downstream applications. Input DNA was standardized to 300 ng and analyzed in a 1% (w/v) TAE/agarose/EtBr gel (shown above). The size marker "M" is a 1 kb ladder (Zymo Research)



DNA Yields Increase Linearly with Increasing Volumes of Human Whole Blood Using the *Quick*-DNA™ Universal Kit. Six replicates of 25, 50, 100, and 200 µl of human whole blood were processed.

Reliable & Consistent

Purity redefined



Zymo-Spin™ Technology Ensures No Carryover of Buffer, Salts, or Other PCR Inhibitors. DNA is ready for all sensitive downstream applications such as qPCR, Next-Gen Sequencing arrays, and methylation analysis.

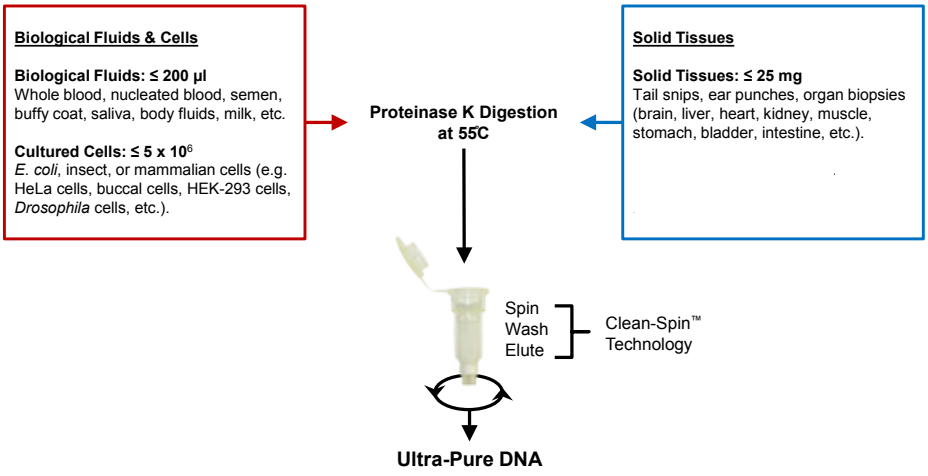
Quick-DNA™ Universal Kit

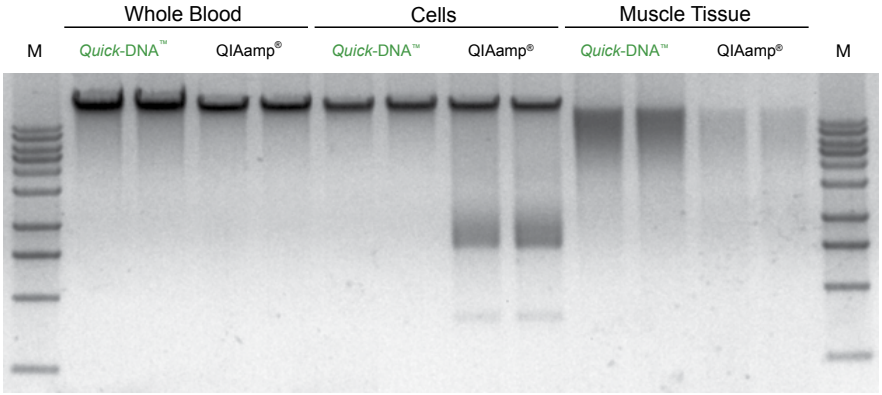
Highlights

- Extract high-quality DNA easily and reliably from any sample source (biological fluids, cultured/monolayer cells, solid tissues, etc.).
- Zymo-Spin™ technology ensures DNA is ready for all sensitive downstream applications such as qPCR, DNA-sequencing, arrays, and methylation analysis.

Description

The *Quick*-DNA™ Universal Kit is the easiest method for high yield total DNA extraction (e.g., genomic, plasmid, mitochondrial, viral) from any biological fluid, cell culture, or solid tissue sample. Innovative reagents and Zymo-Spin™ Column technologies allow for ultra-pure and concentrated genomic DNA > 50 kb to be eluted in as little as 35 µl. Zymo-Spin™ Columns ensure no buffer retentiown. Purified DNA is RNA-free, bypassing the need for RNase A treatment and ensuring accurate quantification for applications like library preparations. Isolated DNA is suitable for immediate use in sensitive downstream applications including qPCR, DNA-seq, arrays, and methylation analysis.





The *Quick*-DNA™ Universal Kit (Quick-DNA™) yields highly concentrated DNA without RNA contamination when compared to the QIAamp® (QIAGEN) utilizing porcine whole blood, HeLa cells, and bovine muscle tissue. The resulting DNA from each sample was analyzed in a 1% (w/v) TAE/agarose/EtBr gel (shown above).

Product	*Cat. No.*	*Size*
Quick-DNA™ Universal Kit	D4068 D4069	50 preps. 200 preps.
Quick-DNA™ Universal 96 Kit	D4070 D4071	2 x 96 preps. 4 x 96 preps.

Use

Fresh/Frozen Soft Tissue..... ✓
Solid Tissue..... ✓
Cultured Cells..... ✓
Buccal Cells/Swabs..... ✓
Buffy Coat..... ✓
Whole Blood..... ✓
Semen..... ✓
Mitchondria..... ✓
Viral DNA..... ✓

Specifications

Removal of PCR Inhibitors..... ✓
Proteinase K included..... ✓

***Quick*-DNA™ Universal Kit**
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 50 µl

***Quick*-DNA™ Universal 96 Kit**
Format..... 96-Well
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 15 µl

Available Formats

Zymo-Spin™ IIC-XL D4068, D4069 (p. 176)

I-96-XL Plate D4070, D4071 (p. 182)

Quick-DNA™ Urine Kit

Use

Urine..... ✓

Specifications

Sample Source..... Urine
Sample Volume..... ≤ 40 ml
Column Binding Capacity..... 5 µg
DNA Size..... 100 bp to 23 kb
DNA Quality
High quality DNA can be used for downstream application, such as PCR, bisulfite treatment/methylation detection, array, etc.

Available Format

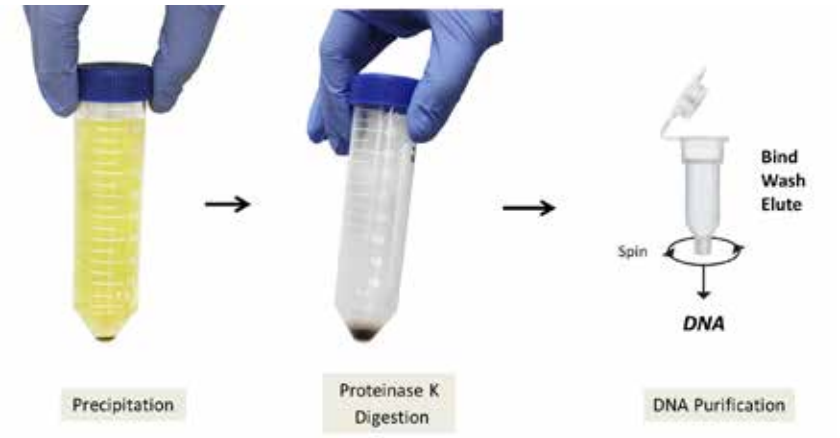
Zymo-Spin™ IC-S D3061 (p. 175)

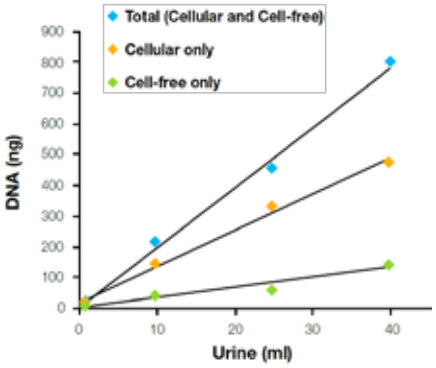
Highlights

- Purify cellular and/or cell-free DNA easily and reliably from up to 40 ml of urine.
- Uniquely formulated urine conditioning reagent allows stabilization of DNA in urine for up to 1 month at ambient temperature.
- Zymo-Spin™ column technology ensures DNA is ready for all sensitive downstream applications including qPCR, DNA-sequencing, arrays, and DNA methylation analysis.

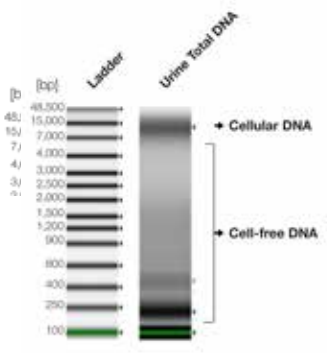
Description

The *Quick*-DNA™ Urine Kit is an innovative product designed for easy, reliable, and rapid isolation of cellular and/or cell-free DNA from up to 40 ml of urine. The product features a uniquely formulated urine DNA stabilization reagent that also functions as a precipitation reagent, Urine Conditioning Buffer. After collection, total urine or cell-free urine can be stored at ambient temperature for up to one month by adding the Urine Conditioning Buffer. When ready to extract the urine DNA, just add the Clearing Beads, vortex, and centrifuge to collect the precipitate. Following precipitation, chemical lysis and enzymatic digestion are used to extract DNA from the precipitate. The DNA is purified and concentrated using Zymo-Spin™ IC-S Columns. Urine DNA isolated with the *Quick*-DNA™ Urine Kit is ideal for qPCR, array, methylation analysis, and other downstream applications.





DNA yields increase linearly with increasing volumes of urine from healthy subjects extracted using the *Quick*-DNA™ Urine Kit. DNA was isolated from 1 ml, 10 ml, 25 ml, and 40 ml urine. DNA concentration was quantified using the Femto™ Human DNA Quantification Kit (Zymo Research, E2005).



Both intact and fragmented DNA can be effectively purified from urine using the *Quick*-DNA™ Urine Kit. 5 ml of urine from a healthy female donor was processed and DNA was eluted in 20 µl final volume. 1 µl of the sample was analyzed using a 2200 Tapestation.

Product	*Cat. No.*	*Size*
Quick-DNA™ Urine Kit	D3061	50 preps.

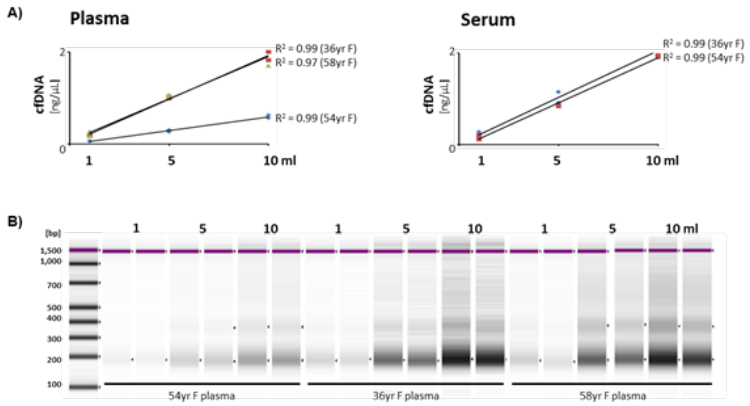
Quick-cfDNA™ Serum & Plasma Kit

Highlights

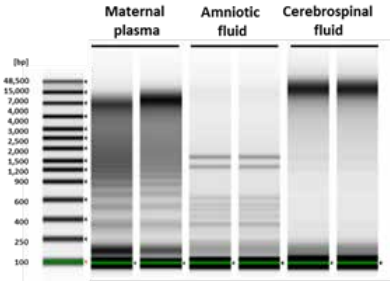
- High-quality DNA, including cell-free, is easily and robustly purified from up to 10 ml of serum/plasma or up to 1 ml amniotic fluid or cerebrospinal fluid.
- Zymo-Spin™ technology enables elution of DNA in as little as 35 µl and ensures it is ready for all sensitive downstream applications such as qPCR and Next-Generation sequencing.

Description

Quick-cfDNA™ Serum & Plasma Kit provides a simple and reliable method for the rapid preparation of high-quality circulating cell-free DNA from serum, plasma, amniotic fluid and cerebrospinal fluid (CSF). A combination of chemical and enzymatic methods are used to efficiently recover total DNA (including cell-free apoptotic, necrotic, mitochondrial and viral DNA) linearly from a wide range of sample volumes. Zymo-Spin™ technology allows for ultra-pure DNA to be eluted in as little as 35 µl water. The resulting DNA is suitable for all subsequent analyses and molecular manipulations such as qPCR, Next-Generation sequencing and DNA methylation analyses.



Cell-free DNA recovery is directly scalable using the *Quick*-cfDNA™ Serum & Plasma Kit. (A) Graphs and (B) gel image show the linear recovery of cfDNA from human plasma and serum (healthy female donors), as measured by Tapestation 2200 (Agilent, in duplicates).



Total DNA is efficiently purified from cell-free biological fluids with the *Quick*-cfDNA™ Serum & Plasma Kit. Total DNA, including both high and low molecular weight species, purified (duplicates) from human maternal plasma, amniotic fluid and cerebrospinal fluid was analyzed by Tapestation 2200 (Agilent).

Product	*Cat. No.*	*Size*
Quick-cfDNA™ Serum & Plasma Kit	D4076	50 preps.
Quick-cfDNA™ Serum & Plasma Buffer Set	D4076-A	Refill

Use

Serum..... ✓
Plasma..... ✓
Amniotic fluid..... ✓
Cerebrospinal fluid..... ✓

Specifications

Processing Volume
- Plasma..... ≤ 10 ml
- Serum..... ≤ 10 ml
- Amniotic fluid..... ≤ 1 ml
- Cerebrospinal fluid..... ≤ 1 ml

DNA Recovery..... ≥ 100 bp
Elution Volume..... ≥ 35 µl

Available Format

Zymo-Spin™ III-S D4076, D4077

Quick-gDNA™ Kits

Use

Cultured Cells..... ✓
Buccal Cells/Swabs..... ✓
Buffy Coat..... ✓
Whole Blood..... ✓
Mitochondria..... ✓

Specifications

Removal of PCR Inhibitors..... ✓
Processing Time..... 15 - 30 min.
Workflow.....omits Proteinase K digestion for blood and cells

***Quick*-gDNA™ MicroPrep**
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl

***Quick*-gDNA™ MiniPrep**
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 50 µl

***Quick*-gDNA™ MidiPrep**
Format..... Spin Column
Binding Capacity... 125 µg/prep.
Elution Volume..... ≥ 150 µl

ZR-96 *Quick*-gDNA™
Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 30 µl

Available Formats

Zymo-Spin™ IC D3020, D3021 (p. 175)

Zymo-Spin™ IIC D3024, D3025 (p. 176)

Zymo-Spin™ V-E with Zymo-Midi Filter™ D3100 (p. 178)

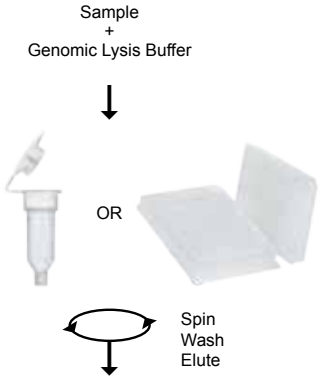
Silicon-A™ Plate D3010, D3011, D3012 (p. 182)

Highlights

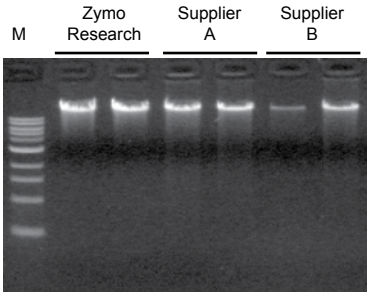
- Easy purification of high quality DNA from whole blood, buffy coat, swabs, or cultured cells.
- Protocol excludes the use of Proteinase K and organic denaturants.
- Compatible with commonly used anticoagulants (i.e., EDTA, heparin, citrate).
- Eluted, inhibitor-free DNA is ideal for PCR, endonuclease digestion, bisulfite conversion/methylation detection, sequencing, genotyping, etc.

Description

The *Quick*-gDNA™ kits are for the convenient, rapid isolation of total DNA (e.g., genomic, mitochondrial, viral) from a variety of biological sample sources. Whole blood (fresh or stored), buffy coat, buccal cells, cells from culture, and many biological liquid samples can be processed with these kits. These products feature Zymo-Spin™ column/plate technology for high-quality DNA purification in minutes. PCR inhibitors are effectively removed, and the eluted DNA is suitable for PCR, nucleotide blotting, DNA sequencing, restriction endonuclease digestion, bisulfite conversion/methylation analysis, and other downstream applications.



Ultra-pure DNA for...
- ✓ PCR
- ✓ Endonuclease Digestion
- ✓ Genotyping
- ✓ Bisulfite Conversion & Methylation Analysis



DNA isolated from porcine whole blood using the *Quick*-gDNA™ MiniPrep. Equivalent amounts (100 µl) of blood were processed without Proteinase K using the *Quick*-gDNA™ MiniPrep in half the time as compared to the kits from suppliers A and B. Equal volumes of eluted DNA were then analyzed (in duplicate) in a 0.8% (w/v) TAE/agarose/ethidium bromide gel. The size marker "M" is a 1 kb ladder (Zymo Research).

Product	*Cat. No.*	*Size*
Quick-gDNA™ MicroPrep	D3020 D3021	50 preps. 200 preps.
Quick-gDNA™ MiniPrep (uncapped)	D3006 D3007	50 preps. 200 preps.
Quick-gDNA™ MiniPrep (capped)	D3024 D3025	50 preps. 200 preps.
Quick-gDNA™ MidiPrep	D3100	25 preps.
ZR-96 *Quick*-gDNA™	D3010 D3011 D3012	2 x 96 preps. 4 x 96 preps. 10 x 96 preps.

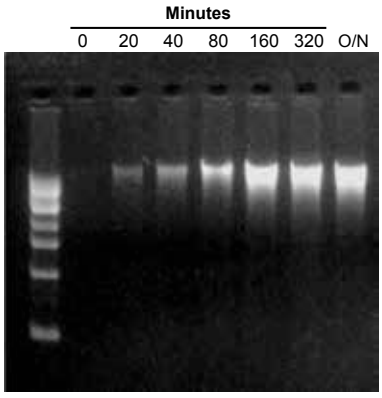
ZR Genomic DNA™-Tissue Kits

Highlights

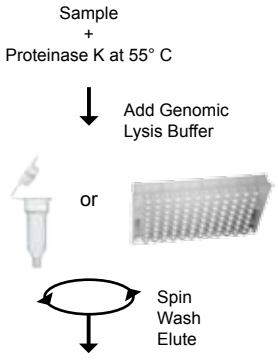
- For high quality DNA purification from solid tissues (e.g., tail snips, ear punches, adipose tissue, etc.), whole blood, plasma, serum, buffy coat, lymphocytes, cultured cells, buccal cells, FFPE tissues, semen, hair, and other biological sources.
- Combines Proteinase K digestion with innovative Zymo-Spin™ column technology.
- Isolated DNA is ideal for PCR, endonuclease digestion, Southern blotting, bisulfite conversion/methylation detection, sequencing, genotyping, etc.

Description

The ZR Genomic DNA™-Tissue kits are simple procedures for the rapid isolation of total DNA (e.g., genomic, mitochondrial, parasitic, microbial, viral) from a variety of solid tissues. The products have been optimized for maximal recovery of ultra-pure DNA without RNA contamination and are also compatible with inputs including: buffy coat, bone marrow, cells from culture, whole blood (fresh or stored), serum, plasma, and many biological liquid samples. For processing, simply digest the sample with the supplied Proteinase K then add the Genomic Lysis Buffer, vortex, and transfer the mixture to the supplied spin column. PCR inhibitors are effectively removed during the purification process and purified DNA is suitable for downstream applications including: PCR, Southern blotting, DNA sequencing, endonuclease digestion, bisulfite conversion/methylation analysis, etc.



High yield/quality DNA is successfully isolated from porcine muscle using the ZR Genomic DNA™-Tissue MiniPrep. Equivalent amounts (25 mg) of muscle tissue were processed using the ZR Genomic DNA™-Tissue MiniPrep after incubation with Proteinase K at 55ºC for the indicated times (in minutes) or overnight (O/N). Equal volumes of eluted DNA were analyzed in a 0.8% (w/v) TAE/agarose/ethidium bromide gel. M: 1 kb ladder (Zymo Research).



Ultra-pure DNA for...

- ✓ PCR
- ✓ Endonuclease Digestion
- ✓ Southern Blotting
- ✓ Genotyping
- ✓ Bisulfite Conversion & Methylation Analysis

Product	*Cat. No.*	*Size*
ZR Genomic DNA™-Tissue MicroPrep	D3040 D3041	50 preps. 200 preps.
ZR Genomic DNA™-Tissue MidiPrep	D3110	25 preps.
ZR Genomic DNA™-Tissue MiniPrep	*See our Legacy Page (p. 113)*	
ZR-96 Genomic DNA™-Tissue MiniPrep	D3055 D3056 D3057	2 x 96 preps. 4 x 96 preps. 10 x 96 preps.
ZR-96 Genomic DNA™ MagPrep	D3083 D3084	2 x 96 preps. 4 x 96 preps.

Use

Fresh/Frozen Soft & Solid Tissue..... ✓
Tail Snips..... ✓
Ear Punches..... ✓
Feathers & Hair..... ✓
Cultured Cells..... ✓
Buccal Cells/Swabs..... ✓
Buffy Coat..... ✓
Whole Blood..... ✓
Plasma/Serum..... ✓
Semen..... ✓
Mitochondria..... ✓

Specifications

Removal of PCR Inhibitors..... ✓
Proteinase K included..... ✓

ZR Genomic DNA™ -Tissue MicroPrep
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl

ZR Genomic DNA™ -Tissue MiniPrep
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 50 µl

ZR Genomic DNA™ -Tissue MidiPrep
Format..... Spin Column
Binding Capacity..... 125 µg/prep.
Elution Volume..... ≥ 150 µl

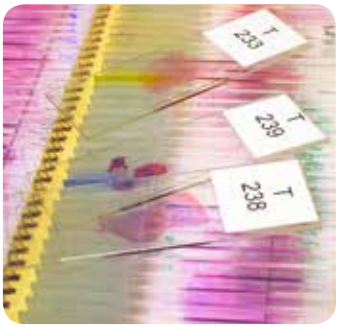
ZR-96 Genomic DNA™ -Tissue MiniPrep
Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 30 µl

ZR-96 Genomic DNA™ MagPrep
Format..... Magnetic Beads
Binding Capacity..... 10 µg/well
Elution Volume.....≥100µl
Processing Time.....3hr.
Automation Ready!

ZR FFPE DNA MiniPrep™

Use

FFPE Blocks..... ✓
FFPE Tissue Sections..... ✓



Specifications

Removal of PCR Inhibitors..... ✓
Proteinase K Digestion..... ✓

Sample Size..... Up to 25 mg tissue
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 30 µl
DNA Size Limits..... 50 bp - 25 kb

Available Format

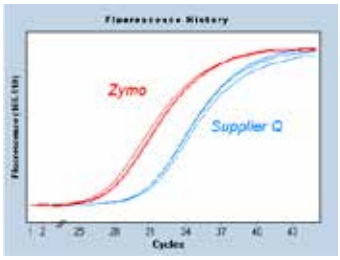
Zymo-Spin™ IIC D3065, D3066 (p. 176)

Highlights

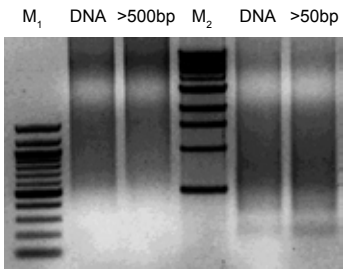
- High performance sample prep technology for high quality DNA (up to ~25 µg/prep) from FFPE tissue samples & sections.
- Selectable size cutoff technology; recover total DNA >50 bp or >500 bp.
- Eluted DNA is RNA-free and ideal for PCR, Next-Gen library prep, enzymatic manipulation, etc.

Description

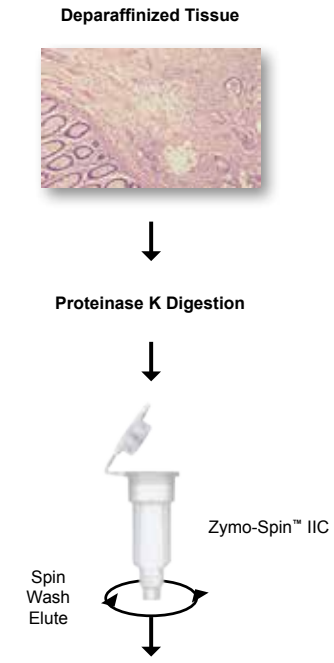
The ZR FFPE DNA MiniPrep™ provides a simple and reliable method for high yield/quality DNA isolation from formalin-fixed, paraffin embedded (FFPE) tissue samples and sections. The unique chemistries of the product have been optimized for maximum recovery of non-crosslinked, ultra-pure DNA without RNA. Simply digest deparaffinized tissues using the provided Proteinase K, heat, and then purify the DNA with the Zymo-Spin™ columns in the kit. DNA >50 bp or >500 bp can be selectively isolated by altering the lysis buffer conditions as given in the protocol. PCR inhibitors are effectively removed during the isolation procedure, and eluted DNA is ideal for PCR, Next-Gen library prep, enzymatic manipulation, etc.



High quality FFPE DNA. Equivalent amounts of DNA isolated using Zymo and Supplier Q procedures were used for real time PCR analysis. DNA isolated using the ZR FFPE DNA MiniPrep™ consistently yielded lower *Ct* values as depicted by the amplification curves above.



Selectable DNA Size. Equivalent amounts of DNA resolved in a 1% agarose/TAE/EtBr gel show binding conditions may be adjusted with the ZR FFPE DNA MiniPrep™ to selectively isolate DNA > 50 bp or > 500 bp. M_1 is a 100 bp DNA ladder, M_2 is a 1 kb DNA ladder (Zymo Research).



Product	*Cat. No.*	*Size*
ZR FFPE DNA MiniPrep™	D3065 D3066	50 preps. 200 preps.

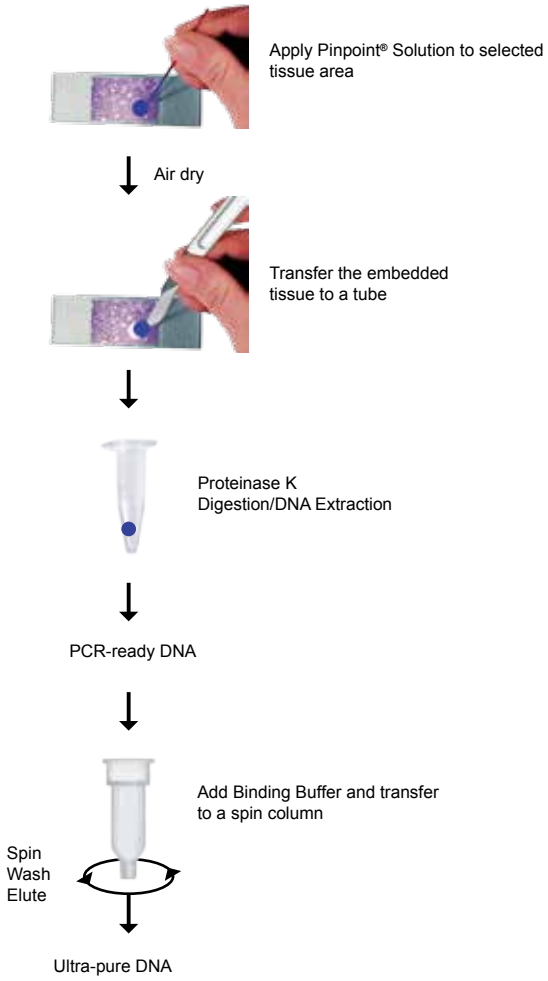
Pinpoint® Slide DNA Isolation System

Highlights

- Convenient and streamlined method for the isolation of genomic DNA from targeted areas of fresh and FFPE tissue sections (slides).
- Features Pinpoint® tissue sampling technology and a one-step DNA extraction method.

Description

The Pinpoint® Slide DNA Isolation System is an innovative product for the isolation of total DNA from targeted areas of fresh, frozen, and FFPE tissue sections. There is no need for expensive specialized equipment or computer software. Instead, the system combines innovative Pinpoint® tissue sampling technology, Proteinase K digestion, and a one-step DNA extraction method for the isolation of DNA that is ideal for PCR, sequencing, etc.



Product	*Cat. No.*	*Size*
Pinpoint® Slide DNA Isolation System	D3001	50 preps.

Use

Tissue Sections..... ✓
FFPE Tissue Sections..... ✓

Specifications

Removal of PCR Inhibitors..... ✓
Proteinase K Digestion..... ✓

Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl
DNA Size Limits..... 75 bp - 25 kb
Processing Time..... 5 hr.

Available Format

Zymo-Spin™ I D3001 (p. 175)

YeaStar™ Genomic DNA Kit

Use

Yeast..... ✓
Zymolyase-sensitive Fungi..... ✓

Specifications

Removal of PCR Inhibitors..... ✓
Format..... Spin Column
Binding Capacity.....25µg/prep.
Elution Volume.....≥60µl
Removal of PCR Inhibitors
Processing Time.....1.5hr.

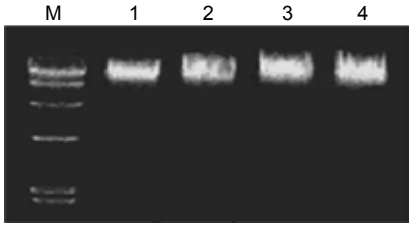
Highlights

- Efficient DNA isolation from a broad spectrum of fungal species susceptible to yeast lytic enzyme (i.e., Zymolyase) lysis.
- Genomic DNA can be used for Southern blotting, PCR, restriction enzyme digestion, etc.

Description

The YeaStar™ Genomic DNA Kit is designed for reliable and efficient isolation of genomic DNA from a broad spectrum of fungal species, including *Aspergillus fumigatus*, *Aspergillus nidulans*, *Aspergillus nivens* var. *aureus*, *Candida albicans*, *Pichia pastoris*, *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*, and any fungi whose cell walls are susceptible to yeast lytic enzyme. The kit is based on highly efficient enzyme lysis and Zymo-Spin™ column technology. Each standard prep yields about 7 - 20 µg of DNA with a size distribution of 35 - 60 kb. The resulting genomic DNA can be used for direct analysis including Southern blotting, PCR, restriction endonuclease digestion, etc.

Ultra-pure DNA for...
✓ PCR
✓ Southern Blotting
✓ Endonuclease Digestion



Agarose gel electrophoresis of DNA prepared using the YeaStar™ Genomic DNA Kit. Lanes: M: λ-DNA Hind III marker; 1: *S. cerevisiae*; 2: *P. pastoris*; 3: *C. albicans*; 4: *S. pombe*.

Available Format

Zymo-Spin™ III D2002 (p. 176)

Product	*Cat. No.*	*Size*
YeaStar™ Genomic DNA Kit	D2002	40 preps.

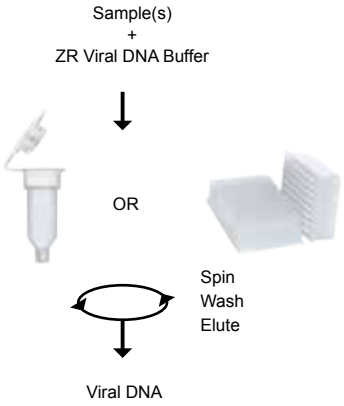
ZR Viral DNA Kits™

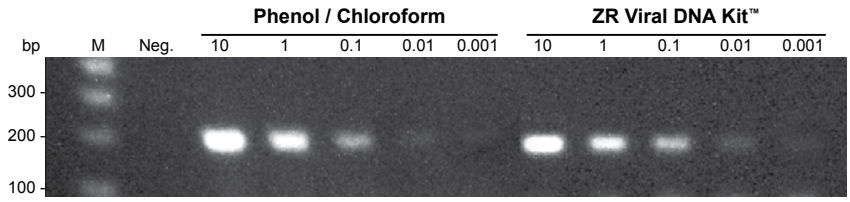
Highlights

- Quick recovery of viral DNA from a wide range of sources using Zymo-Spin™ column and plate technologies.
- Column and plate designs allow DNA to be eluted at high concentrations into minimal volumes.
- Eluted DNA is suitable for PCR, Southern blotting, and restriction endonuclease digestion.

Description

The ZR Viral DNA Kit™ and ZR-96 Viral DNA Kit™ provide for the rapid isolation of high-quality viral DNA from a wide range of biological sources. A uniquely designed buffer is included for the efficient denaturation of viral particles in whole blood (fresh and stored), plasma, serum, tissue, ascites, cultured cells, and from liquid samples. DNA can be eluted with elution buffer or water and is suitable for subsequent PCR, nucleotide blotting, and restriction endonuclease digestion procedures.



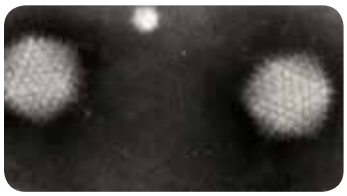


Viral DNA purification. Human HBV DNA was isolated from 10 to 0.001 µl of human serum using phenol/chloroform or ZR Viral DNA Kit™. The presence of HBV DNA is evidenced by a ~200 bp PCR amplicon. Lane M is a 100 bp DNA Ladder and "Neg." is the negative control for PCR.

Product	*Cat. No.*	*Size*
ZR Viral DNA Kit™	D3015 D3016	50 preps. 200 preps.
ZR-96 Viral DNA Kit™	D3017 D3018	2 x 96 preps. 4 x 96 preps.

Use

Fresh/Frozen Soft Tissue..... ✓
Cultured Cells..... ✓
Whole Blood..... ✓
Plasma/Serum..... ✓
Virus..... ✓



Specifications

Removal of PCR Inhibitors..... ✓
Binding Capacity..... 5 µg/prep.
DNA Size Limits..... 100 bp - 50 kb

ZR Viral DNA Kit™
Format..... Spin Column
Elution Volume..... ≥ 6 µl
Processing Time..... 15 min.

ZR-96 Viral DNA Kit™
Format..... 96-Well
Elution Volume..... ≥ 10 µl
Processing Time..... 25 min.

Available Formats

Zymo-Spin™ IC D3015, D3016 (p. 175)

Zymo-Spin™ I-96 D3017, D3018 (p. 182)

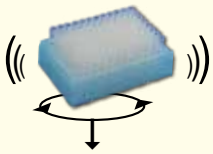
Environmental DNA Purification

High Quality DNA from Environmental Samples

Bead bashing is often required for the efficient processing of tough-to-lyse organisms and environmental samples. Our environmental purification kits feature unique BashingBead™ technology (pp. 100-105), which allows isolation of DNA from samples refractory to conventional lysis procedures including tough-to-lyse tissues, soil samples, feces, plants, seeds, food, arthropods, Gram (+) and Gram (-) bacteria, yeast, filamentous fungi, unicellular and filamentous algae, and protozoa. These products lead to high yield and high quality DNA suitable for downstream applications such as PCR, sequencing, hybridization, restriction digestion, and other enzymatic processes.

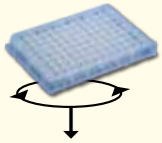
Zymo Research's state of the art BashingBeads™ are constructed of the highest quality, most dense ceramic material available today. They are used when thorough sample homogenization/lysis is required by the researcher. DNA shearing by physical and chemical methods is minimized since the beads are fracture resistant and chemically inert. They are unique amongst the lysis matrices offered by other companies for DNA isolation from tough-to-lyse materials.

96-Well Format



Pulverize Samples with ZR BashingBead™ Lysis Rack

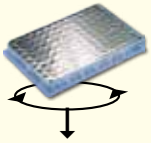
Deep-well Block



Bind, Wash, Elute DNA with Silicon-A™ Plate

PCR Ready Ultra-pure DNA

Continue with the following steps for ZR Soil Microbe DNA, ZR Fecal DNA, and ZR Plant/Seed DNA Kits only.



Polyphenolic Removal with Silicon-A™-HRC Plate

PCR Ready, Ultra-pure DNA

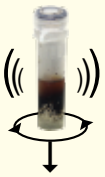
BashingBead™ Lysis & Environmental DNA Purification

Technology Overview

The BashingBead™ DNA purification kits from Zymo Research are for rapid recovery of PCR-ready DNA from a broad range of tough-to-lyse organisms and environmental samples. Kits have been specifically designed for the efficient recovery of inhibitor-free DNA from plants, seeds, tissues, insects, and microorganisms that inhabit soil, sludge, sediment, or fecal samples. Products are available in spin column Micro- (5 µg/prep), Mini- (25 µg/prep), Midi- (125 µg/prep) and 96-Well (5 µg/well) formats – these formats are diagramed below and on the following page.

For processing, samples are simply transferred to the provided ZR BashingBead™ Lysis Tubes where samples are rapidly and efficiently lysed by bead beating in uniquely designed lysis buffers. Processing the samples can be performed using any bead mill, pulverizer, or vortex that can accommodate standard 2.0 ml, 50 ml tubes, or 96-well blocks depending on the format of the kit. Following lysis, DNA is isolated using innovative Zymo-Spin™ column and plate technologies, and in cases where plant, feces, or soil samples are processed, the DNA is subsequently filtered to remove humic/fulvic acids or polyphenols that can inhibit PCR. The isolation of inhibitor-free DNA typically takes about 15 minutes.

MicroPrep & MiniPrep Formats



Pulverize Sample with ZR BashingBead™ Lysis Tube

Filter Lysate with Zymo-Spin™ IV

Bind, Wash, Elute DNA with Zymo-Spin™ IC or IIC

PCR Ready Ultra-pure DNA

Continue with the following step for ZR Soil Microbe DNA, ZR Fecal DNA, and ZR Plant/Seed DNA Kits only.

Polyphenolic Removal with Zymo-Spin™ IV-µHRC or IV-HRC

PCR Ready, Ultra-pure DNA

MidiPrep Format

Pulverize Sample in ZR BashingBead™ Lysis/Filtration Tube

Centrifuge & Transfer Lysate to Zymo-Spin™ V-E with Zymo-Midi Filter™

OR

Spin
Wash
Elute

PCR Ready Ultra-pure DNA

Continue with the following step for ZR Soil Microbe DNA, ZR Fecal DNA, and ZR Plant/Seed DNA Kits only.

Polyphenolic Removal with Zymo-Spin™ IV-HRC

PCR Ready, Ultra-pure DNA

ZR Fecal DNA Kits

Use

Feces..... ✓
Gram (+) Bacteria..... ✓
Gram(-)Bacteria..... ✓
Yeast..... ✓
Filamentous Fungi..... ✓
Unicellular Algae..... ✓
Filamentous Algae..... ✓
Protist..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of PCR Inhibitors..... ✓
Removal of Polyphenolic PCR Inhibitors..... ✓

ZR Fecal DNA MicroPrep™
Format.....Spin Column
Binding Capacity.....5 µg/prep.
Elution Volume..... ≥ 10 µl
Processing Time.....15 min.

ZR Fecal DNA MiniPrep™
Format..... Spin Column
Binding Capacity.....25µg/prep.
Elution Volume.....≥25 µl
Processing Time.....15 min.

ZR Fecal DNA MidiPrep™
Format.....Spin Column
Binding Capacity.....125µg/prep.
Elution Volume.....≥150µl
Processing Time.....25 min.

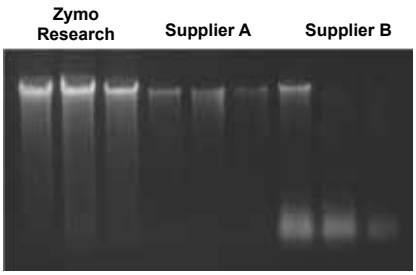
ZR-96 Fecal DNA Kit™
Format..... 96-Well
Binding Capacity.....5µg/well
Elution Volume.....≥50µl
Processing Time.....50 min.

Highlights

- Rapid methods for the isolation of inhibitor-free, PCR-quality DNA from fecal samples in minutes including those from humans, birds, rats, mice, cattle, etc.
- Ultra-high density BashingBeads™ are fracture resistant and chemically inert.
- Zymo-Spin™ column and unique filtration technologies effectively removes PCR inhibitors from the DNA product.

Description

The ZR Fecal DNA Kits are designed for the simple and rapid isolation of inhibitor-free, PCR-quality host cell and microbial DNA from a variety of sample sources including humans, birds, rats, mice, cattle, etc. The procedures are easy and can be completed in minutes: Fecal samples are rapidly and efficiently lysed by bead beating with our state of the art, ultra-high density BashingBeads™. Zymo-Spin™ column or plate technology is then used to isolate the DNA which is subsequently filtered to remove humic acids/polyphenols that can inhibit PCR. Eluted DNA is ideal for downstream molecular-based applications including PCR, arrays, genotyping, methylation detection, etc.



Comparison of DNA yields from rat feces using the ZR Fecal DNA MiniPrep™ and kits from suppliers A and B. Equivalent amounts of feces were processed using each kit and then equal volumes of eluted DNA were analyzed in a 0.8% (w/v) agarose/ethidium bromide gel. Samples were processed in triplicate.

Available Formats

Zymo-Spin™ IC
(p. 175) D6012

Zymo-Spin™ IIC
(p. 176) D6010

Zymo-Spin™ V-E with Zymo-Midi Filter™
(p. 178) D6110

Silicon-A™ Plate
(p. 182) D6011

Product	*Cat. No.*	*Size*
ZR Fecal DNA MicroPrep™	D6012	50 preps.
ZR Fecal DNA MiniPrep™	D6010	50 preps.
ZR Fecal DNA MidiPrep™	D6110	25 preps.
ZR-96 Fecal DNA Kit™	D6011	2 x 96 preps.

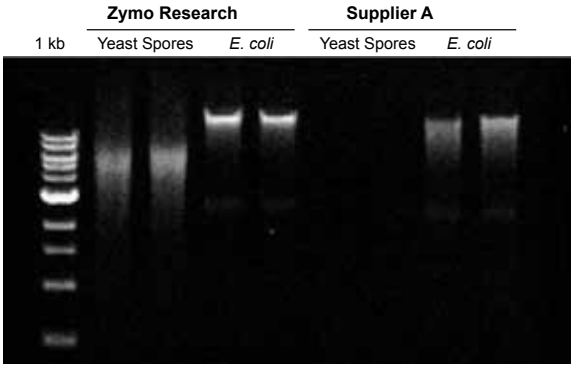
ZR Fungal/Bacterial DNA Kits

Highlights

- Simple, efficient isolation of DNA from all types of tough-to-lyse fungi and bacteria in minutes.
- Ultra-high density BashingBeads™ are fracture resistant and chemically inert.

Description

The ZR Fungal/Bacterial DNA MicroPrep™, ZR Fungal/Bacterial DNA MiniPrep™, ZR Fungal/Bacterial DNA MidiPrep™, and ZR-96 Fungal/Bacterial DNA Kit™ are designed for the simple and rapid isolation of DNA from tough-to-lyse fungi, including *A. fumigatus*, *C. albicans*, *N. crassa*, *S. cerevisiae*, *S. pombe*, as well as Gram (+/-) bacteria, algae, and protozoa. The procedures are easy and can be completed in minutes: fungal and/or bacterial samples are rapidly and efficiently lysed with our state of the art, ultra-high density BashingBeads™. Zymo-Spin™ column or plate technology is then used to isolate the DNA that is ideal for downstream molecular-based applications including PCR, array, etc.



Fungal and bacterial DNA purification. DNA isolated from *Saccharomyces cerevisiae* (spores) and *E. coli* using the ZR Fungal/Bacterial DNA MiniPrep™ is high quality and structurally intact. Equivalent amounts of yeast and bacteria were processed using the ZR Fungal/Bacterial DNA MiniPrep™ or the kit from supplier A. Equal volumes of eluted DNA were then analyzed in a 0.8% (w/v) agarose/ethidium bromide gel. The size marker is a 1 kb ladder (Zymo Research).

Available Formats

Zymo-Spin™ IC
(p. 175) D6007

Zymo-Spin™ IIC
(p. 176) D6005

Zymo-Spin™ V-E with Zymo-Midi Filter™
(p. 178) D6105

Silicon-A™ Plate
(p. 182) D6006

Product	*Cat. No.*	*Size*
ZR Fungal/Bacterial DNA MicroPrep™	D6007	50 preps.
ZR Fungal/Bacterial DNA MiniPrep™	D6005	50 preps.
ZR Fungal/Bacterial DNA MidiPrep™	D6105	25 preps.
ZR-96 Fungal/Bacterial DNA Kit™	D6006	2 x 96 preps.

Use

Gram (+) Bacteria..... ✓
Gram (-) Bacteria..... ✓
Yeast..... ✓
Filamentous Fungi..... ✓
Unicellular Algae..... ✓
Filamentous Algae..... ✓
Protist..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of PCR Inhibitors..... ✓

ZR Fungal/Bacterial DNA MicroPrep™
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥10 µl
Processing Time..... 10 min.

ZR Fungal/Bacterial DNA MiniPrep™
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥25 µl
Processing Time..... 10 min.

ZR Fungal/Bacterial DNA MidiPrep™
Format..... Spin Column
Binding Capacity..... 125 µg/prep.
Elution Volume..... ≥ 150 µl
Processing Time..... 20 min.

ZR-96 Fungal/Bacterial DNA Kit™
Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 25 µl
Processing Time..... 40 min.

ZR Soil Microbe DNA Kits

Use

Soil..... ✓
Sediment..... ✓
Sludge..... ✓
Gram(+)Bacteria..... ✓
Gram(-)Bacteria..... ✓
Yeast..... ✓
Filamentous Fungi..... ✓
Unicellular Algae..... ✓
Filamentous Algae..... ✓
Protist..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of PCR Inhibitors..... ✓
Removal of Polyphenolic PCR Inhibitors..... ✓

ZR Soil Microbe DNA MicroPrep™
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl
Processing Time..... 15 min.

ZR Soil Microbe DNA MiniPrep™
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 25 µl
Processing Time..... 15 min.

ZR Soil Microbe DNA MidiPrep™
Format..... Spin Column
Binding Capacity... 125 µg/prep.
Elution Volume..... ≥ 150 µl
Processing Time..... 25 min.

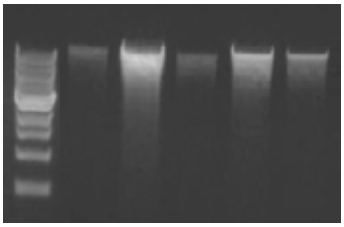
ZR-96 Soil Microbe DNA Kit™
Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 50 µl
Processing Time..... 50 min.

Highlights

- Simple, efficient isolation of humic-free DNA from microbes in soil, sludge, sediment, and sand in minutes including tough-to-lyse bacteria, fungi, algae, and protozoa.
- Ultra-high density BashingBeads™ are fracture resistant and chemically inert.

Description

The ZR Soil Microbe DNA MicroPrep™, ZR Soil Microbe DNA MiniPrep™, ZR Soil Microbe DNA MidiPrep™, and ZR-96 Soil Microbe DNA Kit™ are designed for the simple and rapid isolation of humic-free, PCR-quality DNA from microbes in soil. These products can be used to isolate DNA from tough-to-lyse bacteria, fungi, protozoa, and algae that inhabit a variety of samples including clay, sandy, silty, peaty, chalky, and loamy soils. Soil microbes are rapidly and efficiently lysed by bead beating with our state of the art, ultra-high density BashingBeads™. Zymo-Spin™ column or plate technology is then used to isolate the DNA, which is subsequently filtered to remove humic acids/polyphenols that can inhibit PCR. The procedures can be performed in minutes, and there is no need for organic denaturants or proteinases.



Metagenomic DNA isolated from 5 soil samples. M: 1 kb marker (NEB); 1-5: soil samples (sand, sandy clay loam, hydrophobic sandy loam, course sandy loam, fine gravel).

Available Formats

Zymo-Spin™ IC
(p. 175) D6003

Zymo-Spin™ IIC
(p. 176) D6001

Zymo-Spin™ V-E with Zymo-Midi Filter™
(p. 178) D6101

Silicon-A™ Plate
(p. 182) D6002

Product	*Cat. No.*	*Size*
ZR Soil Microbe DNA MicroPrep™	D6003	50 preps.
ZR Soil Microbe DNA MiniPrep™	D6001	50 preps.
ZR Soil Microbe DNA MidiPrep™	D6101	25 preps.
ZR-96 Soil Microbe DNA Kit™	D6002	2 x 96 preps.

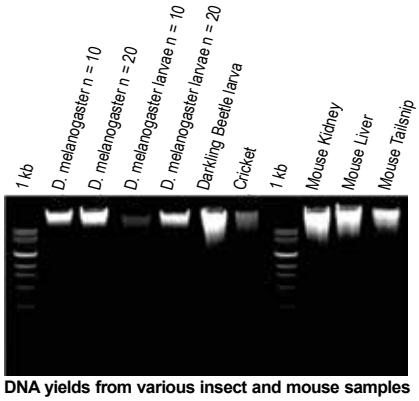
ZR Tissue & Insect DNA Kits

Highlights

- Simple and efficient isolation of DNA from insects, including mosquitoes, bees, lice, ticks, and *D. melanogaster.* Also compatible with tough-to-lyse tissues from other organisms.
- Ultra-high density BashingBeads™ are fracture resistant and chemically inert.

Description

The ZR Tissue & Insect DNA MicroPrep™, ZR Tissue & Insect DNA MiniPrep™, ZR Tissue & Insect DNA MidiPrep™, and ZR-96 Tissue & Insect DNA Kit™ are designed for the simple and rapid isolation of DNA (e.g., genomic, viral, mitochondrial) from fresh, frozen, or stored insect specimens including mosquitoes, bees, lice, ticks, and *D. melanogaster.* The procedures are easy and can be completed in minutes: Samples are rapidly and efficiently lysed by bead beating with our state of the art, ultra-high density BashingBeads™. The DNA is then isolated and purified using our Zymo-Spin™ column and plate technologies and is ideal for downstream molecular-based applications including PCR, array, genotyping, etc. The procedures are compatible with mammalian tissues, whole blood, and cultured cells.



DNA yields from various insect and mouse samples using the ZR Insect & Tissue DNA MiniPrep™. Various amounts of sample were processed with equal volumes of eluted DNA analyzed in a 0.8% (w/v) agarose/ethidium bromide gel. The 1 kb DNA size marker is from Zymo Research.

Available Formats

Zymo-Spin™ IC
(p. 175) D6015

Zymo-Spin™ IIC
(p. 176) D6016

Zymo-Spin™ V-E with Zymo-Midi Filter™
(p. 178) D6116

Silicon-A™ Plate
(p. 182) D6017

Product	*Cat. No.*	*Size*
ZR Tissue & Insect DNA MicroPrep™	D6015	50 preps.
ZR Tissue & Insect DNA MiniPrep™	D6016	50 preps.
ZR Tissue & Insect DNA MidiPrep™	D6115	25 preps.
ZR-96 Tissue & Insect DNA Kit™	D6017	2 x 96 preps.

Use

Insects/Arthropods..... ✓
Tough-to-Lyse Tissues..... ✓
Tough-to-Lyse Organisms..... ✓
Soft & Solid Tissues (Food)..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of PCR Inhibitors..... ✓

ZR Tissue & Insect DNA MicroPrep™
Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥ 10 µl
Processing Time..... 10 min.

ZR Tissue & Insect DNA MiniPrep™
Format..... Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 25 µl
Processing Time..... 10 min.

ZR Tissue & Insect DNA MidiPrep™
Format..... Spin Column
Binding Capacity..... 125 µg/prep.
Elution Volume..... ≥ 150 µl
Processing Time..... 20 min.

ZR-96 Tissue & Insect Kit™
Format..... 96-Well
Binding Capacity..... 5 µg/well
Elution Volume..... ≥ 25 µl
Processing Time..... 40 min.

ZR Plant/Seed DNA Kits

Use

PlantMaterial.....✓
Seeds.....✓
Fruit.....✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of PCR Inhibitors..... ✓
Removal of Polyphenolic PCR Inhibitors..... ✓

ZR Plant/Seed DNA MicroPrep™
Format.....Spin Column
Binding Capacity.....5µg/prep.
Elution Volume.....≥10µl
Processing Time.....15min.

ZR Plant/Seed DNA MiniPrep™
Format.....Spin Column
Binding Capacity.....25µg/prep.
Elution Volume.....≥25µl
Processing Time.....15min.

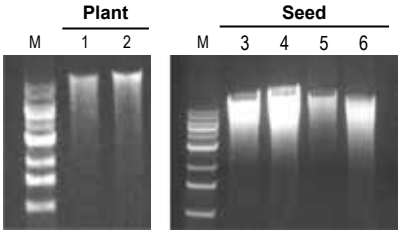
ZR-96 Plant/Seed DNA Kit™
Format..... 96-Well
Binding Capacity.....5µg/well
Elution Volume.....≥50µl
Processing Time.....50min.

Highlights

- Simple methods for the isolation of DNA from tough-to-lyse plant and seed samples in minutes.
- Ultra-high density BashingBeads™ are fracture resistant and chemically inert.
- Zymo-Spin™ column technology coupled with filtration removes polyphenolic PCR inhibitors from the DNA product.

Description

The ZR Plant/Seed DNA MicroPrep™, ZR Plant/Seed DNA MiniPrep™, ZR Plant/Seed DNA MidiPrep™, and the ZR-96 Plant/Seed DNA Kit™ are designed for the simple, rapid isolation of inhibitor-free, PCR-quality DNA from a variety of plant sample sources including leaves, stems, buds, flowers, fruit, seeds, etc. The procedures are easy and can be completed in minutes: Plant samples are rapidly and efficiently lysed by bead beating with our state of the art, ultra-high density BashingBeads™. Polysaccharides, lipids, and polyphenols/tannins are removed from the DNA using our Zymo-Spin™ column or plate technology. The eluted DNA is filtered to remove polyphenolics making it ideal for downstream molecular-based applications including PCR, arrays, etc.



Comparison of DNA yields from various plant and seed samples using the ZR Plant/Seed DNA MiniPrep™. Equivalent amounts of plant materials were processed with equal volumes of eluted DNA analyzed in a 0.8% (w/v) agarose/ethidium bromide gel. M is a 1 kb DNA size marker (Zymo Research). *Arabidopsis thaliana* (1), juniper (2), corn kernel (3, 4), sunflower seed (5, 6).

Available Formats

Zymo-Spin™ IC
(p. 175) D6022

Zymo-Spin™ IIC
(p. 176) D6020

Zymo-Spin™ V-E with Zymo-Midi Filter™
(p. 178) D6120

Silicon-A™ Plate
(p. 182) D6021

Product	*Cat. No.*	*Size*
ZR Plant/Seed DNA MicroPrep™	D6022	50 preps.
ZR Plant/Seed DNA MiniPrep™	D6020	50 preps.
ZR-96 Plant/Seed DNA Kit™	D6021	2 x 96 preps.

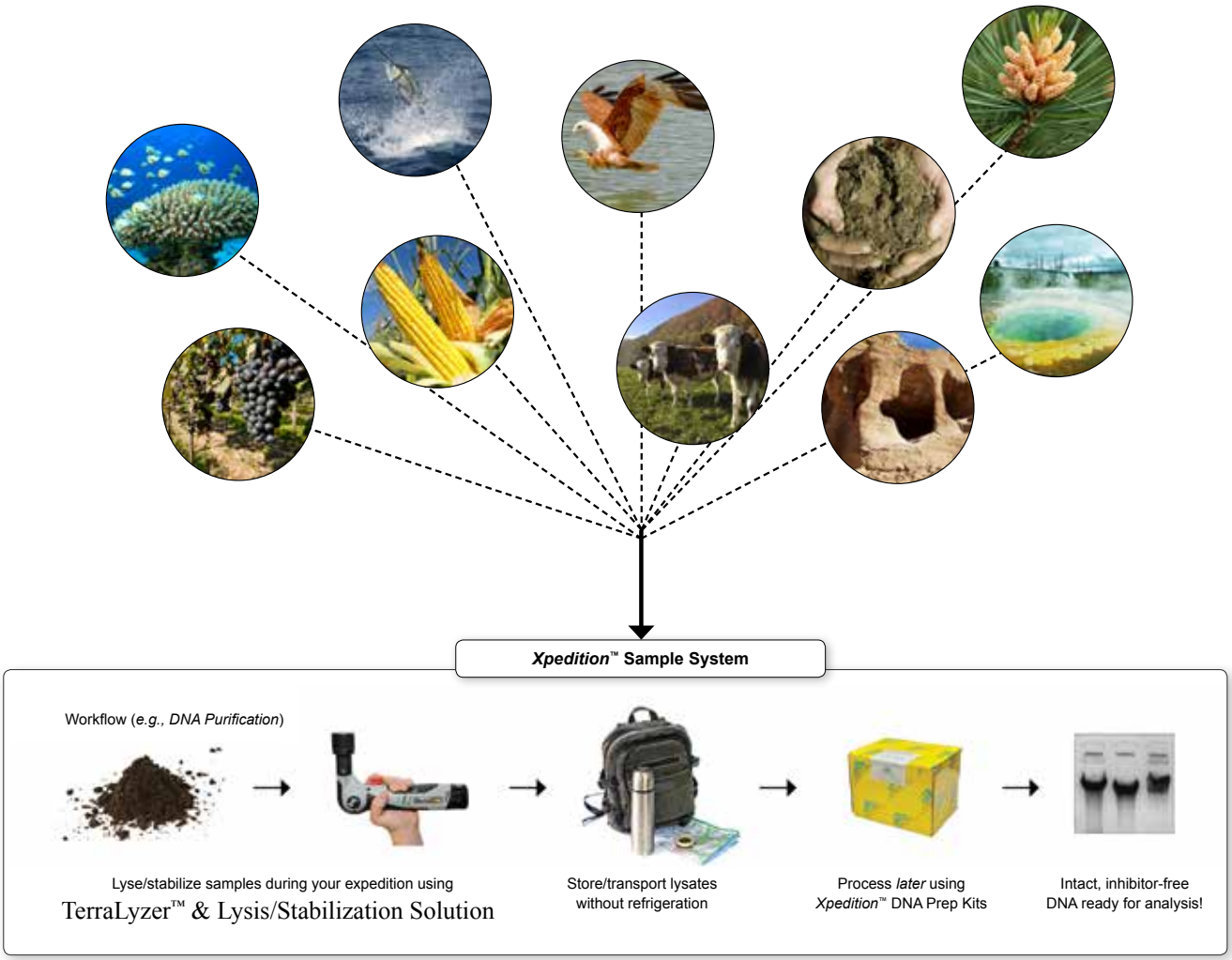
"Take the Lab to the Field" with *Xpedition*™ Technologies

Technology Overview

Degradation and contamination of biological samples have been obstacles to scientific study, and may be particularly problematic in highly sensitive molecular-analysis techniques (e.g., PCR of low copy DNA). Use of cryogenic freezing methods for environmental/forensic sample preservation may often be too impractical to be employed. The solution is the TerraLyzer™ and *Xpedition*™ Sample Prep Technologies from Zymo Research. The TerraLyzer™ is a portable, hand-held device developed for vigorous cell disruption (bead beating) that allows the researcher/investigator to ***"Take the Lab to the Field"***.

DNA in samples processed with *Xpedition*™ DNA Sample Prep Technology is preserved for subsequent storage/transportation without the requirement for refrigeration. This is due to a unique lysis/stabilization solution that is featured in all *Xpedition*™ DNA Prep kits.

The TerraLyzer™ is ideal for both field and lab use. *You can use it here, use it there, you can use it anywhere!*



Product	***Cat. No.***	***Size***
Xpedition™ Soil/Fecal DNA MiniPrep	D6202	50 preps.
Xpedition™ Fungal/Bacterial DNA MiniPrep	D6206	50 preps.
Xpedition™ Tissue & Insect DNA MiniPrep	D6216	50 preps.
Xpedition™ Plant/Seed DNA MiniPrep	D6221	50 preps.
Xpedition™ Lysis/Stabilization Solution	D6202-1-40	40 ml
TerraLyzer™	S6022	1 unit

DNA/RNA Co-Purification

Purify DNA & RNA from the Same Sample

To meet the needs of scientists who wish to extract DNA and RNA from the same source simultaneously, Zymo Research developed a line of DNA/RNA co-purification kits. A scientist can process cells or tissues with the ZR-*Duet*™ DNA/RNA MiniPrep to purify DNA and RNA from the same sample into separate products. The ZR Viral DNA/RNA Kits™ are for the purification of viral and host DNA and RNA together using blood or cell culture as input. The Oligo Clean & Concentrator™ facilitates the rapid recovery of both small DNA and RNA. Finally, the ssDNA/RNA Clean & Concentrator™ is an adaptation of our DCC® product line for purifying ssDNA/RNA samples.

Parallel Purification & Co-purification of DNA & RNA

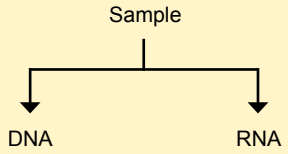
Technology Overview

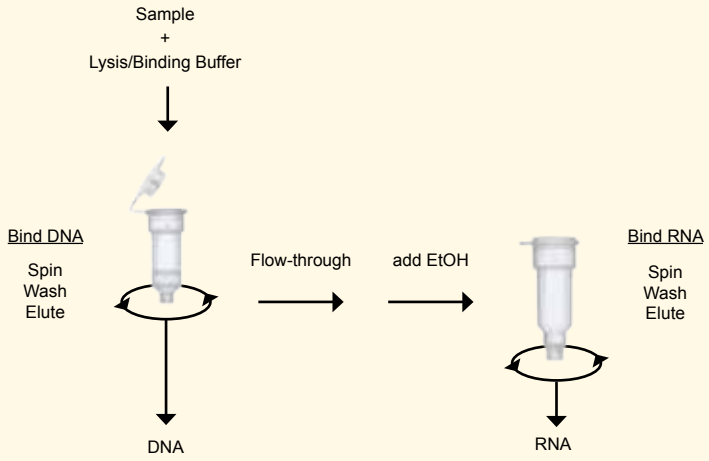
Zymo Research features a series of products for simultaneous purification of DNA and RNA from variety of samples. Both parallel purification or co-purification products provide high quality DNA and RNA while the procedures are fast and simple to perform. The overview of parallel purification and co-purification procedures is illustrated below.

The ZR-*Duet*™ DNA/RNA MiniPrep is designed for parallel purification of DNA and RNA from the same sample. Without sacrificing DNA yield, this kit also allows for recovery of a broad range of RNA including small RNA molecules (≥ 17 nt).

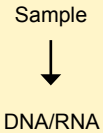
Viral nucleic acids can be readily extracted and co-purified from cells or body fluids with a single column format using the ZR Viral DNA/RNA Kit™. For high-throughput (96-well) sample processing, the ZR-96 Viral DNA/RNA Kit™ is available. The ssDNA/RNA Clean & Concentrator™ streamlines the separation of single stranded DNA and RNA probes and transcripts from double stranded nucleic acid species and provides a convenient method for the removal of enzymes, dNTPs etc. The spin column facilitates concentration of single stranded nucleotide moieties ≥ 17 nt into as little as 6 µl.

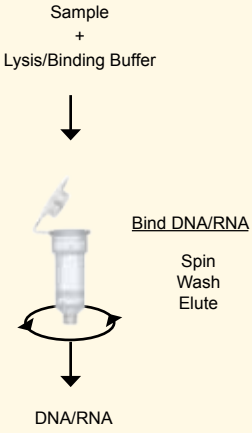
What is Parallel Purification?





What is Co-purification?





ZR-*Duet*™ DNA/RNA MiniPrep

Use

Fresh/Frozen Soft Tissue..... ✓
Cultured Cells..... ✓
Buccal Cells/Swabs..... ✓
Buffy Coat..... ✓

Specifications

In-column DNase Digestion..... ✓
RNA*later*® Compatible..... ✓

Format..... Spin Column
DNA Binding Capacity...25µg/prep.
RNA Binding Capacity...25µg/prep.
DNA Elution Volume..... ≥ 50 µl
RNA Elution Volume..... ≥ 25 µl
Processing Time..... 15 min.

Available Formats

Zymo-Spin™ IIC D7001 (p. 176)

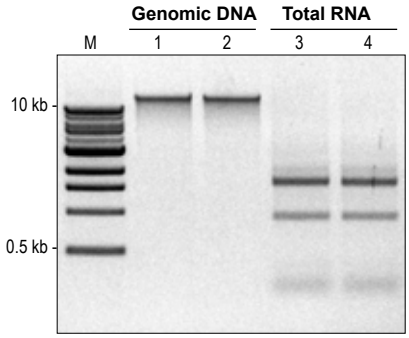
Zymo-Spin™ IIIC D7001 (p. 176)

Highlights

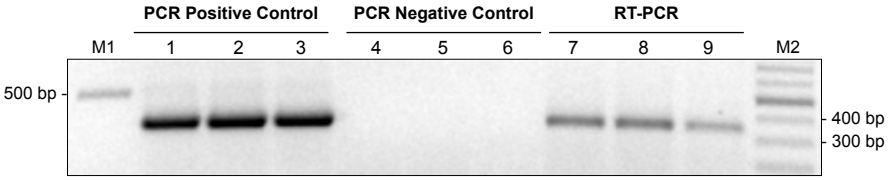
- Quick isolation and separation of genomic DNA and total RNA (up to ~25 µg each) from a wide range of sources using Zymo-Spin™ column technology.
- DNA/RNA products are suitable for use in PCR, RT-PCR, and other procedures.
- Omits the use of organic denaturants and proteases.

Description

The ZR-*Duet*™ DNA/RNA MiniPrep provides a quick method for parallel purification of high quality genomic DNA and total RNA from small amounts of cells and tissue. The kit isolates both genomic DNA and large and small RNA species without the use of phenol or reducing agents. Small RNAs (e.g., tRNAs, microRNAs) can be recovered following a simple adjustment of the RNA isolation protocol – no extra steps are required! Both DNA and RNA (up to ~25 µg each) from 5 x 10^6 cells can be isolated in less than 15 minutes.



DNA and RNA purified using the ZR-*Duet*™ DNA/RNA MiniPrep. Genomic DNA (lane 1, 2) and total RNA (lane 3, 4) isolated from human epithelial cells (HCT 116) with the ZR-*Duet*™ DNA/RNA MiniPrep. M is a 1 kb DNA Marker (Zymo Research).



PCR amplification of β-actin transcript (353 bp fragment shown) following DNA and RNA isolation from human epithelial cells (HCT 116) with the ZR-*Duet*™ DNA/RNA MiniPrep: PCR positive control (DNA template; lane 1, 2, 3), PCR negative control (RNA template; lane 4, 5, 6), RT-PCR (lane 7, 8, 9). M1 and M2 are 1 kb and 100 bp DNA Markers, respectively (Zymo Research).

Product	*Cat. No.*	*Size*
ZR-*Duet*™ DNA/RNA MiniPrep Kit	D7001	50 preps.

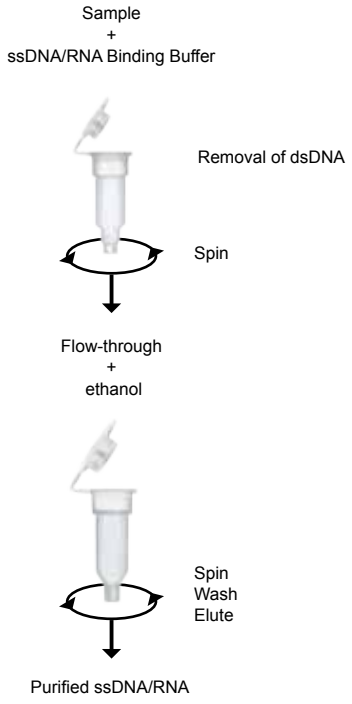
ssDNA/RNA Clean & Concentrator™

Highlights

- Quick (10 minute) method for separating, cleaning, and concentrating short (< 200 nt) ssDNA or RNA.
- Ideal for non-enzymatic elimination of genomic DNA from transcripts, probes, primers, etc.
- Zymo-Spin™ column technology allows for elution into minimal volumes (≥ 6 µl).

Description

The ssDNA/RNA Clean & Concentrator™ provides a simple and reliable method for the rapid separation, clean-up, and concentration of up to ~5 µg (per prep.) of single stranded DNA and/or RNA from double stranded species (e.g., genomic DNA). This simple 10 minutes procedure is based on the use of a unique single-buffer system and Zymo-Spin™ column technology. Single stranded DNA or RNA ≥ 17 nucleotides (e.g., transcripts, probes, primers) can be safely treated and co-purified using this kit. The result is highly concentrated, purified DNA/RNA that is suitable for subsequent molecular methods including PCR, RT-PCR, hybridization, etc.



Product	*Cat. No.*	*Size*
ssDNA/RNA Clean & Concentrator™	D7010 D7011	20 preps. 50 preps.

Use

ssDNA..... ✓
ssRNA..... ✓
Transcripts..... ✓
Probes..... ✓
Primers..... ✓

Specifications

Format..... Spin Column
Binding Capacity..... 5 µg/prep.
Elution Volume..... ≥6 µl
Size Limits..... 17-200 nt
Processing Time..... 10 min.

Available Formats

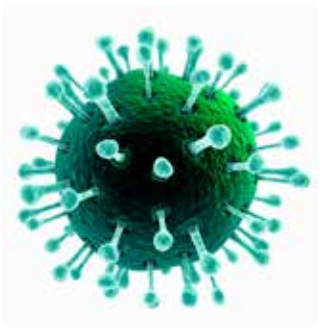
Zymo-Spin™ IC D7010, D7011 (p. 175)

Zymo-Spin™ IIC D7010, D7011 (p. 176)

ZR Viral DNA/RNA Kits™

Use

Cultured Cells..... ✓
Plasma/Serum..... ✓
Virus..... ✓



Specifications

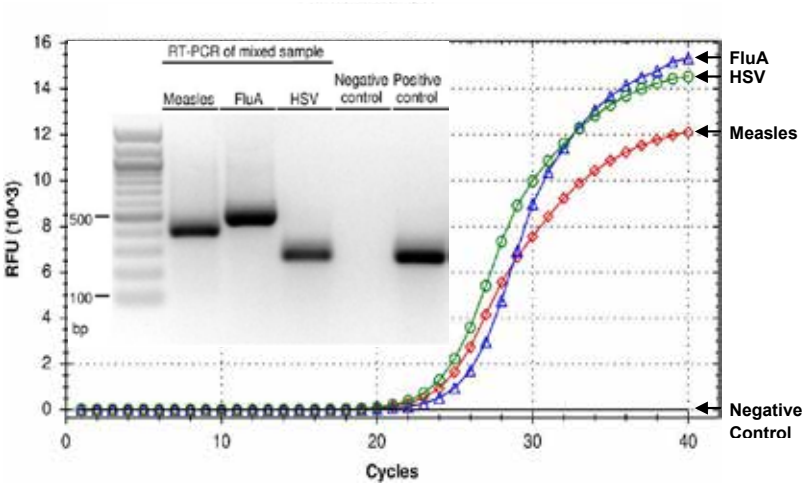
Binding Capacity..... 25 µg/prep.
Format..... Spin Column
Elution Volume..... ≥ 35 µl
Processing Time..... 5 min.

Highlights

- Quick co-purification of viral DNA/RNA from a wide range of sources.
- Zymo-Spin™ column and plate technologies allow ultra-clean DNA and RNA to be eluted into minimal volumes.
- Omits the use of organic denaturants and proteases.

Description

The ZR Viral DNA/RNA Kit™ and ZR-96 Viral DNA/RNA Kit™ provide for rapid, single column or high-throughput (96-well) isolation of high-quality viral nucleic acids from a wide range of biological sources. The kit can be used to successfully isolate viral DNA and RNA from cell-free body fluids as well as cellular suspensions at concentrations ≤ 1 x 10^5 cells/ml. The procedure employs a single buffer system that facilitates viral particle lysis and allows for the subsequent DNA/RNA binding onto the matrix of the Zymo-Spin™ IIC-XL Column. The nucleic acids are washed then eluted with DNase/RNase-free Water. The eluted DNA and RNA are suitable for use in various subsequent procedures including RT/PCR.



Detection of DNA/RNA Viruses From A Mixed Population. Viral nucleic acids were isolated from liquid samples using the **ZR Viral DNA/RNA Kit™**. Data are RT-qPCR Ct values for measles, influenza type A (FluA), and herpes-simplex (HSV) viruses were 23.05 (diamonds), 24.56 (triangles), 22.92 (circles), respectively. Negative control – RT-PCR (no template w/ HSV specific primers). Positive control – PCR (HSV template w/ HSV primers).

Available Formats

Zymo-Spin™ IIC-XL D7020, D7021 (p. 176)

Product	*Cat. No.*	*Size*
ZR Viral DNA/RNA Kit™	D7020 D7021	25 preps. 100 preps.

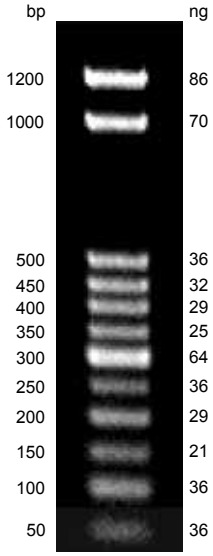
Tools for Effective DNA Analysis

Zymo Research has engineered high-quality products to help you analyze your DNA samples. Working with human, fungal, or bacterial DNA? Ensure your DNA quantification is accurate using Zymo Research's Femto Quantification kits. These products allow for the quantification of 20 femtograms of DNA in as little as 1 µl of sample. The Femto Quantification Kits have a high specificity and sensitivity to ensure accurate quantification, even with a non-target DNA background. Also, our DNA ladders ensure your DNA samples are of the highest quality for processing. This makes DNA size approximation easy for both PCR products as well as plasmid DNAs.

DNA Molecular Weight Markers

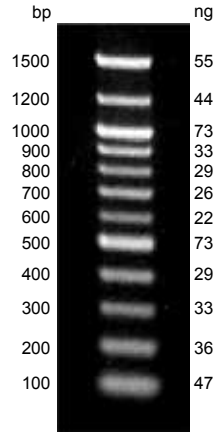
Description

The ZR DNA Markers™ are defined DNA size fragments that encompass a range of sizes from 50 bp up to 10 kb. This makes DNA size approximation easy for both PCR products as well as plasmid DNAs. The ZR 50 bp DNA Marker™, ranging from 50 bp to 1200 bp, is well within the common range of PCR generated DNA fragments. For larger DNAs, the ZR 100 bp DNA Marker™ and ZR 1 kb DNA Marker™ are appropriate. Each marker comes with product information detailing the product and its application.



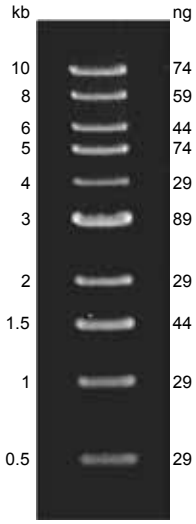
ZR 50 bp DNA Marker™

500 ng of the ZR 50 bp DNA Marker™ was separated in a 1.8% w/v agarose/EtBr/TAE gel.



ZR 100 bp DNA Marker™

500 ng of the ZR 100 bp DNA Marker™ was separated in a 1.5% w/v agarose/EtBr/TAE gel.



ZR 1 kb DNA Marker™

500 ng of the ZR 1 kb DNA Marker™ was separated in a 0.8% w/v agarose/EtBr/TAE gel.

Product	*Cat. No.*	*Size*
ZR 50 bp DNA Marker™	M5001-50 M5001-200	50 µg / 100 µl 200 µg / 400 µl
ZR 50 bp DNA Marker™ (ready-to-load*)	M5004-50	50 µg / 600 µl
ZR 100 bp DNA Marker™	M5002-50 M5002-200	50 µg / 100 µl 200 µg / 400 µl
ZR 100 bp DNA Marker™ (ready-to-load*)	M5005-50	50 µg / 600 µl
ZR 1 kb DNA Marker™	M5003-50 M5003-200	50 µg / 100 µl 200 µg / 400 µl
ZR 1 kb DNA Marker™ (ready-to-load*)	M5006-50	50 µg / 600 µl

Use

DNA Size Standard for Gel Electrophoresis..... ✓

Specifications

Provided as nucleic acid in TE or as a ready-to-load liquid*.... ✓

Ranges available:

ZR 50 bp DNA Marker™: 50-1200 bp

ZR 100 bp DNA Marker™: 100-1500 bp

ZR 1 kb DNA Marker™: 0.5-10 kb

Inclusion of an intensified band is provided in each marker for easy identification.

*All ready-to-load markers contain Xylene-Cyanol FF and Orange G dyes.

Femto™ Human Quantification Kit

Use
Human DNA Detection..... ✓

Specifications
Detection Dye..... SYTO 9®
DNA Input..... 20 fg - 20 ng
Standards Included

Highlights
- Quantify as little 20 femtograms of DNA in as little as 1 µl of sample.
- High specificity and sensitivity for DNA in a background of non-target DNA.
- Fast and simple: add samples to the PreMix... and quantify.

Description
The Femto™ Human DNA Quantification Kit can detect and quantify human DNA with high specificity and sensitivity. Human DNA can be reliably quantified in a background of non-human DNA such as bacterial, fungal, animal, plant DNA, etc. This is essential for downstream applications that require accurate DNA input amounts such as STR analysis. With the Femto™ Human DNA Quantification Kit, dependably quantify as little as 20 fg from 1 µl of purified biological liquids, anthropological samples, or forensic DNA samples.

Product	*Cat. No.*	*Size*
Femto™ Human DNA Quantification Kit	E2005	100 rxns.

Femto™ Bacterial Quantification Kit

Use
Bacterial DNA Detection..... ✓

Specifications
Detection Dye..... SYTO 9®
DNA Input..... 20 fg - 20 ng
Standards Included

Description
The Femto™ Bacterial DNA Quantification Kit can detect and quantify bacterial DNA with high specificity and sensitivity. Bacterial DNA can be reliably quantified in a background of non-bacterial DNA. This is essential for downstream applications that require accurate DNA input amounts such as quantifying bacteria DNA template for Next-generation sequencing library preparation and metagenomic analysis. With the Femto™ Bacterial DNA Quantification Kit, dependably quantify as little as 20 fg of bacterial DNA from 1 µl of purified biological liquids, bacterial cultures, or environmental DNA samples.

Product	*Cat. No.*	*Size*
Femto™ Bacterial DNA Quantification Kit	E2006	100 rxns.

Femto™ Fungal Quantification Kit

Use
Fungal DNA Detection..... ✓

Specifications
Detection Dye..... SYTO 9®
DNA Input..... 20 fg - 20 ng
Standards Included

Description
The Femto™ Fungal DNA Quantification Kit can detect and quantify fungal DNA with high specificity and sensitivity. Fungal DNA can be reliably quantified in a background of non-fungal DNA. This is essential for downstream applications that require accurate DNA input amounts such as quantifying fungal DNA template in order to set up for Next-generation sequencing library preparation and metagenomic analysis. With the Femto™ Fungal DNA Quantification Kit, dependably quantify as little as 20 fg of fungal DNA from 1 µl of purified biological liquids, fungal cultures, or environmental DNA samples.

Product	*Cat. No.*	*Size*
Femto™ Fungal DNA Quantification Kit	E2007	100 rxns.

Legacy Products

Zymo Research has provided high-quality and innovative tools for DNA purification for over 20 years. Below are our Legacy Products for DNA purification. These products have been upgraded to ensure you have the highest recoveries and purities of isolated DNA, but for your convenience are still available for purchase.

Zyppy® Plasmid Maxiprep Kit (Cat. No. D4027-D4028)

Easy and versatile procedure: lyse cells then centrifuge or vacuum, wash, and elute DNA.

✓ *For an updated product check out the* ZymoPURE™ Plasmid Maxiprep (Cat. No. D4202, p. 76)

ZR Plasmid Gigaprep Kit (Cat. No. D4056-D4057)

2 - 10 mg of high quality, endotoxin free (for transfection) plasmid in less than one hour.

✓ *For an updated product check out the* ZymoPURE™ Plasmid Gigaprep (Cat. No. D4204, p. 77)

Quick-gDNA™ Blood Kit (Cat. No. D3070-D3077)

Quick purification of high quality DNA from whole blood, plasma, and serum in less than 15 minutes using innovative Zymo-Spin™ column technology.

✓ *For an updated product check out the Quick*-DNA™ Universal Kit (Cat. No. D4068, p. 89)

ZR Urine DNA Isolation Kit™ (Cat. No. D3060)

Reliable, quick (10 minute) recovery of cellular DNA from urine.

✓ *For an updated product check out the Quick*-DNA™ Urine Kit (Cat. No. D3061, p. 90)

ZR Serum DNA Kit™ (Cat. No. D3013)

Isolate DNA from up to 250 ml serum or plasma efficiently using innovative ZymoBead™ silica-bead technology.

✓ *For an updated product check out the Quick*-DNA™ Serum and Plasma Kit (Cat. No. D4077, p. 91)

ZymoBead™ Genomic DNA Kit (Cat. No. D3004-D3005)

Easy purification of high quality DNA from whole blood, plasma, serum, bodily fluids, buffy coat, lymphocytes, tissue, swabs or cultured cells in less than 20 minutes using innovative ZymoBead™ silica-bead technology.

✓ *For an updated product check out the Quick*-DNA™ Universal Kit (Cat. No. D4068, p. 89)

ZR Genomic DNA™ -Tissue MiniPrep (Cat. No. D3050-3051)

For high quality DNA purification from solid tissues (e.g. tail snips, ear punches, adipose tissue, etc.), whole blood, plasma, serum, hair and other biological sources.

✓ *For an updated product check out the Quick*-DNA™ Universal Kit (Cat. No. D4068, p. 89)

3 The New RNA World

RNA is truly an amazing and important biological molecule that plays absolutely critical roles in regulating many types of biological pathways and processes in all species of life. RNA is widely thought to have been both the first catalytic molecule and the first form of self-replicating genetic material during a period of history referred to as "The RNA World". Despite its obvious importance to biology, the numerous functions and activities carried out by RNA molecules have been underappreciated until recently, largely due to previous limitations in the technologies and tools available to use in RNA research. Recent work is uncovering new classes of RNAs and new activities mediated by RNA molecules. It has also become clear that the majority of genomes for most organisms, once thought to be "junk DNA", are actively transcribed to produce functional RNA species. Now, more than ever, it is evident that we are living in the *New RNA World*.

Zymo Research understands the central role that RNA plays in biological processes and now offers a complete portfolio of products to help researchers perform their RNA experiments efficiently and effectively. This section features information on our RNA products, ranging from the quickest and highest quality RNA purification procedures available to products for cleaning and concentrating crude or contaminated RNA samples and isolation of RNA from a wide variety of sources. The success of all RNA-based experiments depends on first isolating ultra-pure high quality RNA, and our industry-leading products ensure that your RNA samples are ready for all standard and Next-Gen applications to investigate this New RNA World!

RNA Purification *Made Simple*™

THE NEW RNA WORLD

THE
NEW RNA
WORLD

Quick Product Guide

RNA Isolation

Samples in TRIzol®, TRI Reagent®, etc.

without phase separation in 7 min.

Direct-zol™ RNA MiniPrep Plus

100 µg total RNA
(≥17 nt)

*DNase I included

R2070 Page 126

Format:
Spin Column
96-Well Plate
Magnetic Bead

Cells

***Quick*-RNA™ MiniPrep**

100 µg total RNA
(≥17 nt)

*DNase I included

R1054 Page 129

Format:
Spin Column
96-Well Plate

Biological Fluids & Tissues

***Quick*-RNA™ MiniPrep Plus**

100 µg total RNA
(≥17 nt)
from cells, all tissue types, & blood

*DNase I, Proteinase K, DNA/RNA Shield™ included

R1057 Page 130

Format:
Spin Column

ZR Viral (DNA)/RNA Kits™

Serum, plasma, culture supernatant, urine, saliva

R1034 Page 131

Format:
Spin Column
96-Well Plate

ZR Urine RNA Isolation Kit™

Cellular and cell-free RNA from up to 30 ml of urine.

R1038 Page 132

Format:
Spin Column

Quick Product Guide

RNA Isolation

Fixed Tissues

Pinpoint® Slide RNA Isolation System I & II

Total RNA from fresh (I) and FFPE (II) tissue.

R1003 Page 133

Format: Spin Column

Microbial

Culture

ZR Fungal/Bacterial RNA Kits™

50 µg total RNA

(≥17 nt)

*BashingBeads™ included

R2010 Page 137

Format: Spin Column

YeaStar™ RNA Kit

25 µg total RNA

*Zymolyase included

R1002 Page 134

Format: Spin Column

Fecal, soil, water filtrate and other

ZR Soil/Fecal RNA Kits™

50 µg total RNA

(≥17 nt)

*OneStep PCR Inhibitor Removal, BashingBeads™ included

R2040 Page 137

Format: Spin Column

Plant

ZR Plant RNA MiniPrep™

50 µg total RNA

(≥17 nt) from leaves, stems, seeds, etc.

*OneStep PCR Inhibitor Removal, BashingBeads™ included

R2024 Page 138

Format: Spin Column

Quick Product Guide

RNA Clean-up

Enzymatic Reactions, Impure and Diluted Samples

RNA Clean & Concentrator™ Kits

RNA and (ss)DNA
(≥17 nt)

*Optionally supplied with DNase I

R1015 Page 120

Format:
Spin Column
96-Well Plate

Oligo Clean & Concentrator™ Kits

DNA & RNA
(10 to 200 nt)
oligos and probes

D4060 Page 65

Format:
Spin Column
96-Well Plate

Inhibitor Removal

OneStep™ PCR Inhibitor Removal Kits

Removal of polyphenolics, humic/fulvic acids, tannins, melanins, etc. from DNA & RNA

D6030 Page 71

Format:
Spin Column
96-Well Plate

Gel Excisions

Zymoclean™ Gel RNA Recovery Kits

RNA
(>200 nt)
from agarose gels

R1011 Page 121

Format:
Spin Column

ZR small-RNA™ PAGE Recovery Kit

RNA (and DNA)
(>17 nt)
from PAGE gels

R1070 Page 122

Format:
Spin Column

Inhibitor-free RNA from Any Enzymatic Reaction

The RNA Clean & Concentrator™ (RCC™) kits (p. 120) facilitate the efficient removal of RNA polymerases, ligases, and RNA modifying enzymes as well as free NTPs and their analogs including fluorescent and radio-labeled derivatives. Zymo Research developed the Zymoclean™ Gel RNA Recovery Kit (p. 121) and the ZR small-RNA™ PAGE Recovery Kit (p. 122) for recovery of RNA from agarose and polyacrylamide gel matrices. All clean-up kits feature our state of the art Zymo-Spin™ column technology so that RNA can be eluted with minimal volumes (i.e., ≥ 6 µl) of water. This allows for highly concentrated RNA that is well suited for applications like microarrays, RNA transfection, denaturing-gel electrophoresis, Northern blotting, and RT-(q)PCR.

RNA Clean & Concentrator™ Kits

Use

RNA Clean-up..... ✓
DNA-free RNA..... ✓
Enzyme Removal..... ✓
Nucleotide/Dye Removal..... ✓
Small-RNA/Probe Purification.... ✓

Specifications

Format... Spin Column / 96-Well
RNA Size Limits..... ≥ 17 nt

RNA Clean & Concentrator™-5
Binding Capacity.....10 µg/prep.
Elution Volume..... ≥ 6 µl
Processing Time..... 5 min.

RNA Clean & Concentrator™-25
Binding Capacity..... 50 µg/prep.
Elution Volume..... ≥ 25 µl
Processing Time..... 5 min.

RNA Clean & Concentrator™-100
Binding Capacity... 250 µg/prep.
Elution Volume..... ≥ 100 µl
Processing Time..... 10 min.

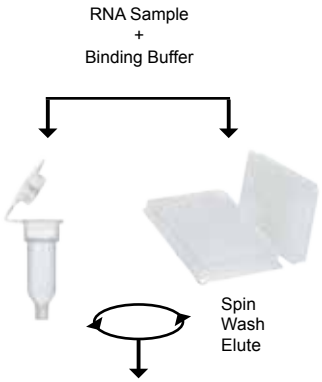
ZR-96 RNA Clean & Concentrator™
Binding Capacity..... 25 µg/well
Elution Volume..... ≥ 10 µl
Processing Time..... 20 min.

Highlights

- Quick methods for cleaning and concentrating RNA.
- Zymo-Spin™ column/plate technology allows RNA to be eluted into minimal volumes.
- Ideal for purification of RNA from aqueous phase following acid phenol extraction.

Description

The RNA Clean & Concentrator™ kits provide simple and reliable methods for the rapid preparation of high-quality RNA. These simple procedures are based on the use of a unique single-buffer system and Zymo-Spin™ technology. The procedures are easy: add the binding buffer to your sample, adjust the conditions for binding by adding ethanol, wash, and elute the concentrated RNA. RNA ≥ 17 bases can be safely treated and recovered using these kits. The result is highly-concentrated, purified RNA that is suitable for subsequent RNA-based methods including RT-PCR, hybridization, etc.



Ultra-pure RNA for...
✓ RT-PCR
✓ qPCR
✓ Hybridization
✓ RNA Interference

Available Formats

Zymo-Spin™ IC (p. 175) R1015, R1016 R1013, R1014

Zymo-Spin™ IIC (p. 176) R1017, R1018

Zymo-Spin™ V-ES with Reservoir

Silicon-A™ Plate (p. 182) R1080

Product	*Cat. No.*	*Size*
RNA Clean & Concentrator™-5	R1015 R1016	50 preps. 200 preps.
RNA Clean & Concentrator™-5 w/ DNase I	R1013 R1014	50 preps. 200 preps.
RNA Clean & Concentrator™-25	R1017 R1018	50 preps. 100 preps.
RNA Clean & Concentrator™-100	R1019	25 preps.
ZR-96 RNA Clean & Concentrator™	R1080	2 x 96 preps.

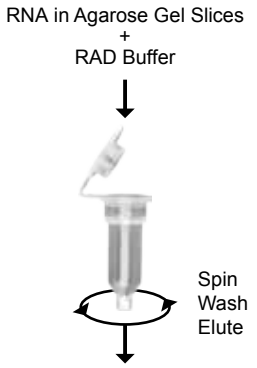
Zymoclean™ Gel RNA Recovery Kit

Highlights

- Quick (30 minute) recovery of purified RNA fragments from agarose gels.
- Recovery ≥ 80% for RNA > 500 nt.

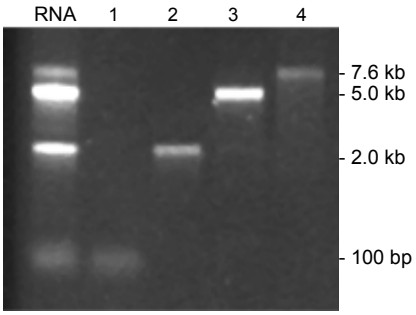
Description

The Zymoclean™ Gel RNA Recovery Kit provides a quick and efficient purification method for recovery of RNA fragments from agarose gels. The procedure combines a unique, single-step agarose dissolving/RNA binding buffer with Zymo-Spin™ column technology to yield high quality, purified RNA in just minutes. The purified RNA is eluted into small volumes of DNase/RNase-free water for highly concentrated samples suitable for subsequent RNA-based manipulations. Compatible with MOPS, TAE, and TBE buffered agarose gels (formaldehyde up to 2.0%).



Ultra-pure RNA for...

✓ Reverse Transcription
✓ Northern Blotting, etc.

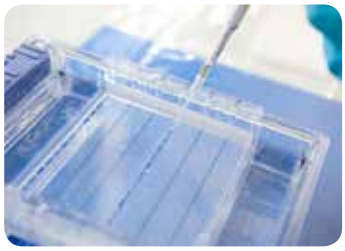


The recovery of RNA from an agarose gel. Different sized RNAs on the left were excised from the gel and recovered using the Zymoclean™ Gel RNA Recovery Kit (lanes 1-4).

Product	*Cat. No.*	*Size*
Zymoclean™ Gel RNA Recovery Kit	R1011	50 preps.

Use

RNA from Agarose Gel Slices.... ✓



Specifications

Format..... Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 6 µl
RNA Size Limits..... ≥ 200 nt
Processing Time..... 30 min.

Available Format

Zymo-Spin™ IC R1011 (p. 175)

ZR small-RNA™ PAGE Recovery Kit

Use

RNA (& DNA) from Polyacrylamide Gel Slices..... ✓

Specifications

Format.....Spin Column
Binding Capacity.....10 µg/prep.
Elution Volume..... ≥ 6 µl
Size Limits..... 17-200 nt
Processing Time.....45 min.

Highlights

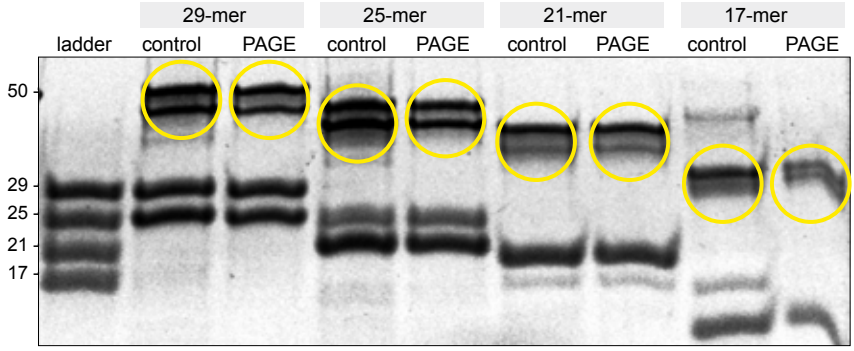
- For efficient recovery of small RNA (& DNA) fragments from polyacrylamide gels.
- Compatible with up to 25% (w/v) polyacrylamide.

Description

The ZR small-RNA™ PAGE Recovery Kit provides an easy and efficient method for the extraction of high quality small RNAs from polyacrylamide gels (native or denatured). The ZR small-RNA™ PAGE Recovery Kit is a refinement of the "crush and soak" method that incorporates a unique buffer system together with Zymo-Spin™ column technologies for improved recovery and added convenience. The recovered RNA can be concentrated into volumes ≥ 6 µl, making it ideal for many downstream enzymatic reactions and manipulations.

Can be used for extraction/isolation of DNA fragments with equal efficiency.

Self-ligated ssRNA Fragments



ladder = ZR small RNA ladder
control = ssRNA oligo ligation control
PAGE = recovered ssRNA oligo self-ligated

Recovery and ligation of single-stranded RNA oligonucleotides. In the image above, the RNA fragments were recovered from a 17.5% (w/v) native polyacrylamide gel using the ZR small-RNA™ PAGE Recovery Kit. All fragments shown were resolved in a native PAGE gel following ligation. T4 polynucleotide kinase and T4 RNA ligase I (New England Biolabs) were used for the phosphorylation and subsequent ligation of the ssRNA samples. Ligated RNAs are circled in yellow. RNA in the gel was visualized with GelStar® Stain (Lonza).

Available Format

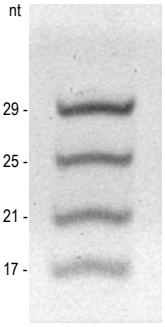
Zymo-Spin™ IC R1070 (p. 175)

Product	*Cat. No.*	*Size*
ZR small-RNA™ PAGE Recovery Kit	R1070	20 preps.

ZR small-RNA™ Ladder

Description

The ZR small-RNA™ Ladder is a microRNA size marker for use in polyacrylamide gel separation methods and small RNA size approximation. The ladder consists of four single-stranded RNA oligonucleotides 17, 21, 25, and 29 bases in length. The marker is supplied in water and can be stained with dyes specific for single-stranded nucleic acid species e.g, GelStar®. Sequence available upon request.



ZR small-RNA™ Ladder. ZR small-RNA™ Ladder (350 ng) was resolved in a 25% (w/v) non-denaturing PAGE gel and visualized after staining with GelStar® for 5 minutes.

Use

MicroRNA sized standard for size estimation of small RNAs in PAGE gels..... ✓

Specifications

Ladder of four microRNAs (17, 21, 25, 29 nt)
Concentration..... 20 ng/µl
Amount..... 10 µg
Storage.....-20°C

Product	*Cat. No.*	*Size*
ZR small-RNA™ Ladder	R1090	10 µg

High Quality RNA from Diverse Sample Sources

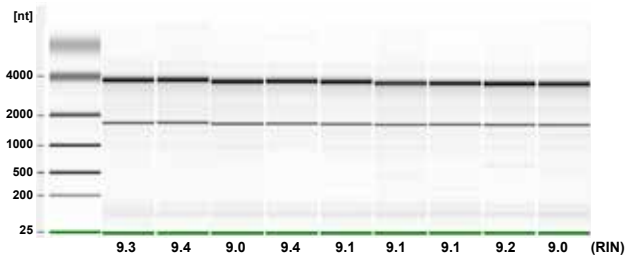
Zymo Research offers an assortment of products that allow for the simple, rapid, and efficient isolation of total RNA from a variety of biological sources including fresh, frozen, or paraffin-embedded tissues, cultured cells, buccal cells, whole blood, plasma, serum, urine, yeast, or RNA viruses. Like our RNA clean-up kits, all of the RNA isolation kits feature Zymo-Spin™ column technology for highly concentrated RNA that is well suited for applications such as microarrays, denaturing-gel electrophoresis, Northern blotting, and RT-PCR. Each kit has been optimized for a particular application with specialized, nuclease-free components that ensure: 1) Maximum levels of membrane solubilization and cellular disruption, 2) Total inhibition of nuclease activity, 3) Complete deproteinization of the sample, 4) Efficient isolation and concentration of the RNA, 5) Stabilization and safe storage of the RNA.

Never phase separate again

The Direct-zol™ RNA MiniPrep facilitates efficient and consistent broad size-range purification (including miRNAs) of high quality (DNA-free) total RNA directly from any sample stored in TRIzol®, TRI Reagent®, and all other acid-guanidinium-phenol based reagents. The innovative Direct-zol™ procedure bypasses phase separation and precipitation steps with a spin column format, saving time and also eliminating phenol carryover without compromising RNA quality.

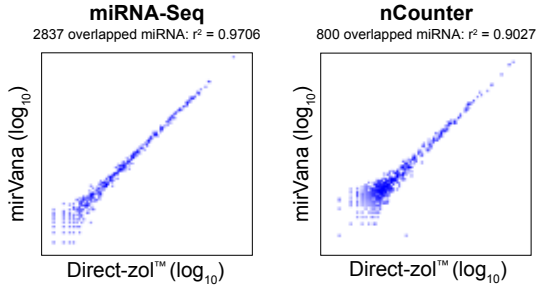
The Direct-zol™ technology couples the effectiveness of TRI Reagent® for infectious agent inactivation and sample preservation with a convenient no hassle, no mess procedure for DNA-free RNA. The Direct-zol™ procedure is ideal for both routine lab use and high-throughput and automated applications.

High Quality RNA



High RNA integrity number (RIN > 9; Bioanalyzer) indicates high-quality RNA was purified from human epithelial cells using the Direct-zol™ RNA Kit.

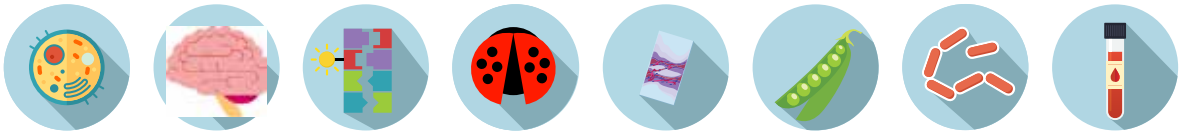
Efficient Small RNA Recovery



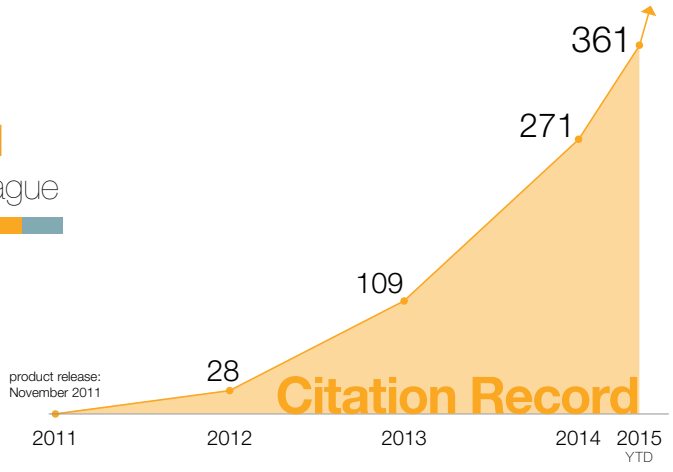
The data show RNA purified from TRIzol® samples using the Direct-zol™ RNA MiniPrep compared to an unbiased method (mirVana™, Ambion). Micro-RNA analysis was performed using miRNA-Seq (MiSeq®, Illumina) and a direct hybridization assay (nCounter®, Nanostring).

Accommodates any sample in TRIzol®, TRI Reagent®, etc.

including cells, tissues, *in vitro* reactions, tough-to-lyse samples, FFPE, plants, microorganisms, and body fluids.



94 % of researchers **would recommend Direct-zol™** to a colleague



*U.S. Patent No. 9,051,563 and other pending patents.

Direct-zol™ RNA Kits

Use

Cells From Culture..... ✓
Solid Tissue..... ✓
Plasma..... ✓
Serum..... ✓
Whole Blood..... ✓
In vitro Processed RNA..... ✓

Samples stored in TRIzol®, TRI Reagent®, RNAzol®, QIAzol®, TriPure, TriSure™ and all other acid-guanidinium-phenol reagents..... ✓

Specifications

Direct-zol™ RNA MiniPrep Plus
Format..... Spin Column
Binding Capacity..... 100 µg
Elution Volume..... ≥ 50 µl
RNA Size Limit..... ≥ 17 nt
Processing Time..... 10 min.

Direct-zol™ RNA MiniPrep
Format..... Spin Column
Binding Capacity..... 50 µg
Elution Volume..... ≥ 25 µl
RNA Size Limit..... ≥ 17 nt
Processing Time..... 10 min.

Direct-zol™ RNA MicroPrep
Format:.....Spin Column
Binding Capacity..... 10 µg
Elution Volume..... ≥ 6 µl
RNA Size Limit..... ≥ 17 nt
Processing Time..... 10 min.

Direct-zol™ -96 RNA
Format..... 96-Well
Binding Capacity..... 10 µg
Elution Volume..... ≥ 10 µl
RNA Size Limit..... ≥ 17 nt
Processing Time..... 30 min.

Highlights

- Quick, purification of high-quality (DNA-free) total RNA directly from samples stored in TRIzol®, TRI Reagent® and all other acid-guanidinium-phenol based reagents.
- Bypasses phase separation and precipitation procedures.
- Efficient, broad range purification of small and large RNAs from cells, tissues, biological liquids, *in vitro* transcripts, etc.
- Ideal for viral inactivation/sample storage (R2051 & R2053).

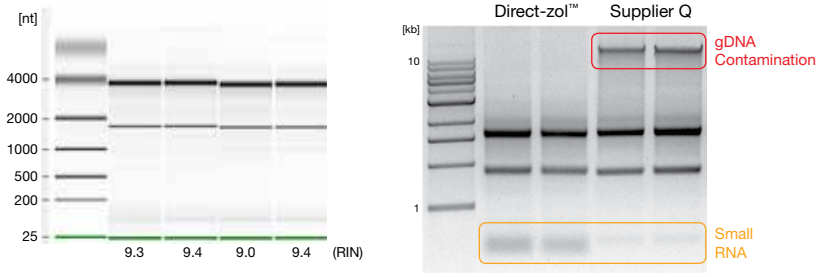
DNase I Included!

Description

The Direct-zol™ RNA kits facilitates efficient and consistent broad size-range purification (including miRNAs) of high quality (DNA-free) total RNA directly from samples stored in TRIzol®, TRI Reagent®, and all other acid-guanidinium-phenol based reagents. The innovative Direct-zol™ procedure bypasses phase separation and precipitation steps with a spin column format, saving time and also eliminating phenol carryover without compromising RNA quality.

The Direct-zol™ technology couples the effectiveness of TRI Reagent® for infectious agent inactivation and sample preservation with a convenient hassle-free, mess-free procedure for DNA-free RNA.

*U.S. Patent No. 9,051,563 and other pending patents.



High RNA integrity number (RIN > 9; Bioanalyzer) indicates high-quality RNA was purified from human epithelial cells using the Direct-zol™-96 MagBead RNA on a Freedom EVO® (Tecan liquid handler) (left), and the Direct-zol™ RNA MiniPrep (right).

Available Formats

Zymo-Spin™ IC
(p. 175) R2060, R2061, R2062, R2063

Zymo-Spin™ IIC
(p. 176) R2050, R2051, R2052, R2053

Zymo-Spin™ IIICG
(p. 176) R2070, R2071, R2072, R2073

Zymo-Spin™ I-96
(p. 182) R2054, R2055, R2056, R2057

Product	*Cat. No.*	*Size*
Direct-zol™ RNA MiniPrep Plus	R2070, R2071* R2072, R2073*	50 preps. 200 preps.
Direct-zol™ RNA MiniPrep	R2050, R2051* R2052, R2053*	50 preps. 200 preps.
Direct-zol™ RNA MicroPrep	R2060, R2061* R2062, R2063*	50 preps. 200 preps.
Direct-zol™-96 RNA	R2054, R2055* R2056, R2057*	2 x 96 preps. 4 x 96 preps.

*Supplied with TRI Reagent®

Direct-zol™-96 Magbead RNA

Highlights

- High-throughput, magnetic bead based purification of high-quality (DNA-free) total RNA directly from samples stored in TRIzol®, TRI Reagent® and all other acid-guanidinium-phenol based reagents.
- Bypasses phase separation and precipitation procedures.
- Efficient, broad range purification of small and large RNAs from cells, tissues, biological liquids, *in vitro* transcripts, etc.
- Automation ready!

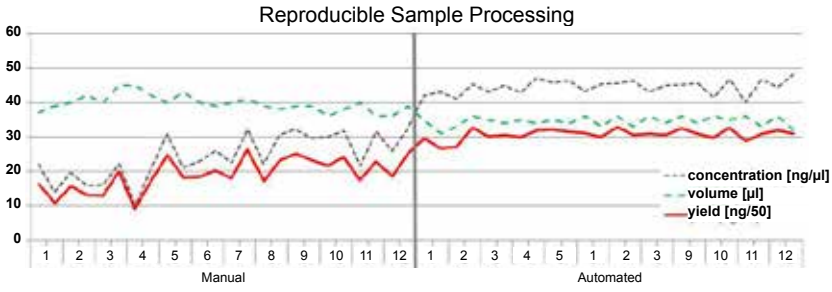
DNase I Included!

Description

The Direct-zol™-96 MagBead RNA is a high-throughput adaptation of Direct-zol™ technology for high-quality RNA directly from samples in TRI Reagent® and similar. The magnetic bead format allows the procedure to be easily automated. The extraction method inactivates viruses and other infectious agents. Total RNA including small and non-coding RNAs (17-200 nt) is effectively isolated from a variety of sample sources (cells, tissues, serum, plasma, blood, biological liquids, etc.) using this product.

*U.S. Patent No. 9,051,563 and other pending patents.

RNA Directly from TRI Reagent® – Now Automated!



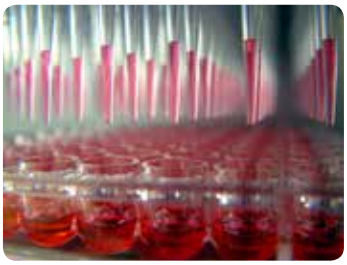
Comparison between manual and automated (Freedom EVO®, Tecan) sample processing with the Direct-zol™-96 MagBead RNA across a 96-Well plate. RNA was purified from human epithelial cells (5 x 10^5/well).

Product	*Cat. No.*	*Size*
Direct-zol™-96 MagBead RNA	R2100, R2101*	2 x 96 preps.
	R2102, R2103*	4 x 96 preps.
	R2104, R2105*	8 x 96 preps.

*Supplied with TRI Reagent®

Use

Cells From Culture..... ✓
Biological Liquids..... ✓
In vitro Processed RNA..... ✓
Samples stored in TRIzol®, TRI Reagent®, RNAzol®, QIAzol®, TriPure, TriSure™ and all other acid-guanidinium-phenol reagents..... ✓



Specifications

Format..... Magnetic Beads
Binding Capacity... 5 µg/20 µl beads
Elution Volume..... 50 µl
RNA Size Limit..... ≥ 17 nt
Automation Ready!

Available Format

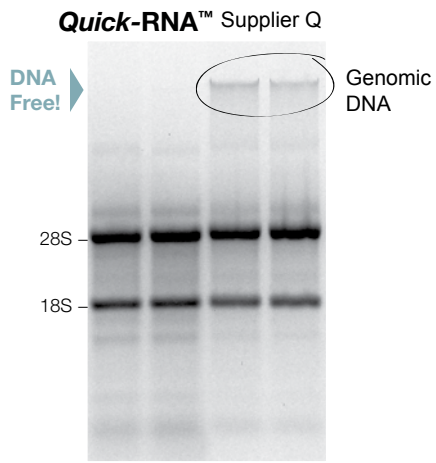
MagBinding Beads R2100-R2105 (p. 181)

High Quality DNA-free RNA from Diverse Sample Sources

The *Quick*-RNA™ MiniPrep kits facilitate efficient and consistent phenol-free purification of total RNA (including miRNAs) from diverse sample sources. The *Quick*-RNA™ kits have been optimized for quick, specific isolation of total (>17 nt), large (>200 nt), or small (17-200 nt) RNA species. The included Zymo-Spin™ column and plate technologies enable unprecedented sample concentration with elution volumes as little as 6 ul. The *Quick*-RNA™ kits remove the vast majority of genomic DNA (Spin-Away™ Filter) and feature convenient in-column DNase I treatment.

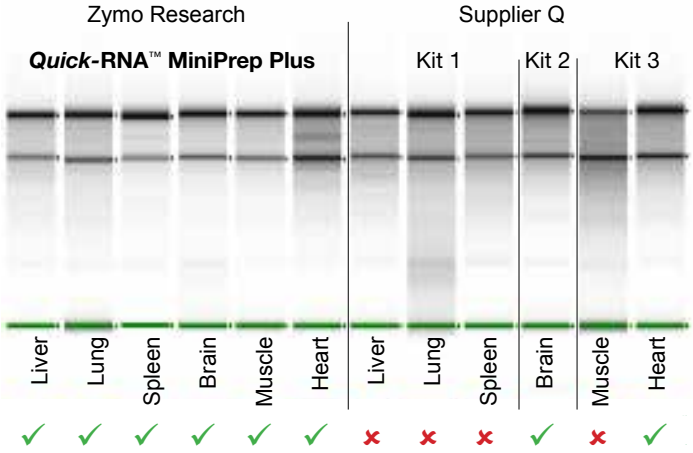
All *Quick*-RNA™ kits include DNase I for DNA-free RNA – Right Away!

Quality



The ***Quick*-RNA™** kits yield high quality total RNA. High levels of genomic DNA contamination are present in the preps from Suppliers Q but not with the ***Quick*-RNA™** kits. Total RNA was isolated from human epithelial cells (sans DNase treatment).

Versatility



High-quality total RNA is isolated from various tissue types using the Quick-RNA™ MiniPrep Plus kit. In comparison, RNA isolated from the same tissue types using three kits recommended by Supplier Q (Agilent 2200 TapeStation; Red = low quality).

Value

	***Quick*-RNA™**	Supplier Q
Small RNA (≥17 nt) recovery	Yes	No
DNase I included	Yes	No
gDNA removal column included	Yes	No
Proteinase K	Yes*	No
DNA/RNA Shield™ (for sample storage)	Yes*	No

**Quick*-RNA™ MiniPrep Plus*

Quick-RNA™ Kits

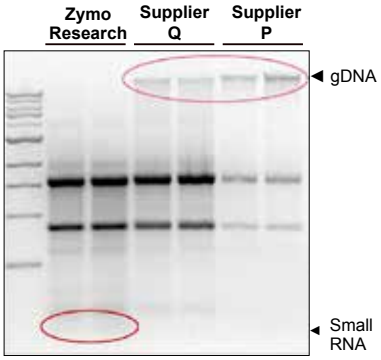
Highlights

- High-quality total RNA from a wide range of samples – single to 10^7 cells.
- Isolate small and large RNAs into separate fractions (optional).
- DNA-free RNA for use in any downstream application.

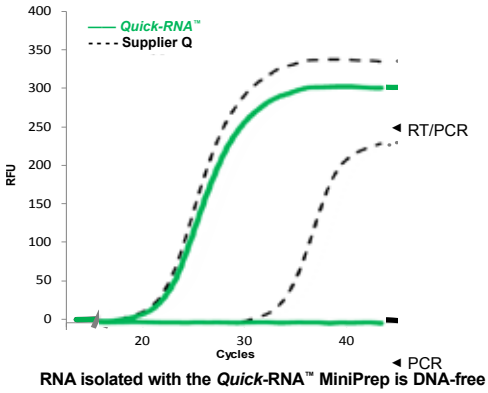
DNase I Included!

Description

The *Quick*-RNA™ kits are innovative products designed for the easy, reliable, and rapid isolation of DNA-free total RNA from a wide range of cell and tissue samples. The procedure combines a unique buffer system with Zymo-Spin™ column and plate technology to yield high quality total RNA (including small RNAs 17-200 nt) in minutes. The procedure is simple: Add the provided RNA Lysis Buffer to extract total RNA from the cells of interest, then purify the RNA using the provided Zymo-Spin™ columns or plate. The result is highly-concentrated, DNA-free RNA that is suitable for subsequent RNA-based methods including RT-PCR, hybridization, sequencing etc. In addition, the kit can be used for enrichment of small and large RNAs in two separate fractions.



Broad range RNA without genomic DNA contamination. The *Quick*-RNA™ MiniPrep compared to kits from Suppliers Q and P. 1% (w/v) agarose gel, M is a 1 kb DNA marker.



RNA isolated with the *Quick*-RNA™ MiniPrep is DNA-free (PCR control - black; RT/PCR - green).Samples isolated with supplier Q's kit provided for comparison (PCR control - dotted; RT/PCR - dashed). Each amplification curve represents an average of three independent isolation experiments. Total RNA isolated from 10^6 human epithelial cells (with in-column DNase treatment).

Available Formats

Zymo-Spin™ IC
(p. 175) R1050, 1051

Zymo-Spin™ IIC
(p. 176) R1054, R1055

Zymo-Spin™ V-E with Reservoir
(p. 176) R1056

Zymo-Spin™ I-96
(p. 182) R1052, R1053

Product	*Cat. No.*	*Size*
Quick-RNA™ MicroPrep	R1050 R1051	50 preps. 200 preps.
Quick-RNA™ MiniPrep*	R1054 R1055	50 preps. 200 preps.
Quick-RNA™ MidiPrep	R1056	25 preps.
ZR-96 *Quick*-RNA™	R1052 R1053	2 x 96 preps. 4 x 96 preps.

*Spin-Away™ Filter included.

Use

Cultured Cells..... ✓
Fresh/Frozen/Soft Tissue*..... ✓
Buccal Cells/Swabs..... ✓
Buffy Coat..... ✓
Biological Fluids ..... ✓

* For solid tissue or tough-to-lyse samples use: ZR Tissue & Insect RNA MicroPrep™ (p. 140)

Specifications

Quick-RNA™ MicroPrep
Format..... Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 6 µl
Sample Size..... ≤ 10^6 cells
Processing Time..... 10 min.

Quick-RNA™ MiniPrep
Format..... Spin Column
Binding Capacity..... 100 µg/prep.
Elution Volume..... ≥ 30 µl
Sample Size..... ≤ 10^7 cells
Processing Time..... 10 min.

Quick-RNA™ MidiPrep
Format..... Spin Column
Binding Capacity..... 1 mg/prep.
Elution Volume..... ≥ 200 µl
Sample Size..... 10^3 - 10^8 cells
Processing Time..... 15 min.

ZR-96 _Quick_-RNA™
Format..... 96-Well
Binding Capacity..... 10 µg/well
Elution Volume..... ≥ 25 µl
Sample Size..... ≤ 10^6 cells
Processing Time..... 30 min.

Quick-RNA™ MiniPrep Plus

Use

All Tissue Types
(Fibrous, Lipid, Tough-to-Lyse)* ✓
Whole Blood..... ✓
Cells (Buccal/Buffy Coat)..... ✓
Swabs..... ✓
Biological Fluids ..... ✓
* For homogenization of solid tissue or tough-to-lyse samples use BashingBeads™ (p. 181)

Specifications

***Quick*-RNA™ MiniPrep Plus**
Format..... Spin Column
Binding Capacity..... 100 µg/prep.
Elution Volume..... ≥ 50 µl
Sample Size..... ≤ 50 mg

Available Format

Zymo-Spin™ IIICG
(p. 176) R1057, R1058

Highlights

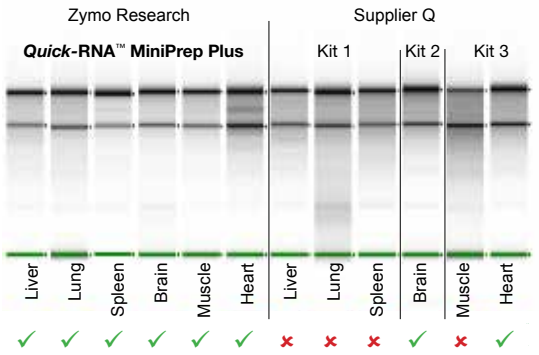
- High-quality total RNA (including small/micro RNAs) from all tissues, cells, whole blood, and biological fluids.
- Worry-free sample storage at ambient temperatures with provided DNA/RNA Shield™.
- *DNA-free* RNA is ready for use in any downstream application.

DNase I Included!

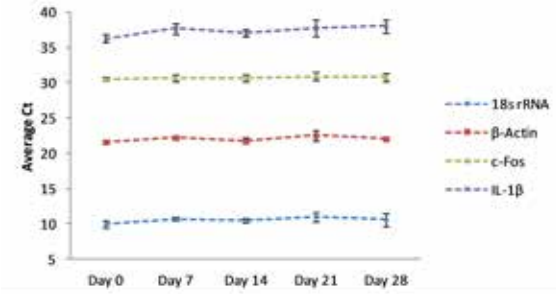
Description

The *Quick*-RNA™ MiniPrep Plus is an innovative and versatile product designed for the easy, reliable, and rapid isolation of DNA-free RNA from all tissue types (up to 50 mg), cells (up to 10^7 animal), whole blood, and biological fluids. Using the unique preservation technology, the DNA/RNA Shield™, samples are stabilized and can be stored without the need for immediate freezing or processing. Furthermore, the provided DNA/RNA Shield™ inactivates RNases as well as microbial pathogens (viruses, bacteria etc.). The procedure combines a unique buffer system with Zymo-Spin™ column technology to yield high quality total RNA (including small RNAs 17-200 nt).

The procedure is simple: Add the provided DNA/RNA Shield™ and Proteinase K to extract total RNA from any tissue, then purify the RNA using the Zymo-Spin™ column or plate workflow. The result is highly-concentrated, DNA-free RNA that is suitable for RT-PCR, hybridization, sequencing, etc. In addition, the kit can be used for the enrichment of small and large RNAs in two separate fractions.



High-quality total RNA is isolated from various tissue types using the Quick-RNA™ MiniPrep Plus kit. In comparison, RNA isolated from the same tissue types using three kits recommended by Supplier Q (Agilent 2200 TapeStation; Green check mark = high quality, Red cross = low quality).



RNA from tissue stored in the DNA/RNA Shield™ (included with the Quick-RNA™ MiniPrep Plus kit) is preserved at ambient temperature. RNA from muscle tissue (mouse) was purified using the ***Quick*-RNA™ MiniPrep Plus** kit and analyzed by RT-PCR.

Product	*Cat. No.*	*Size*
Quick-RNA™ MiniPrep Plus	R1057 R1058	50 preps. 200 preps.

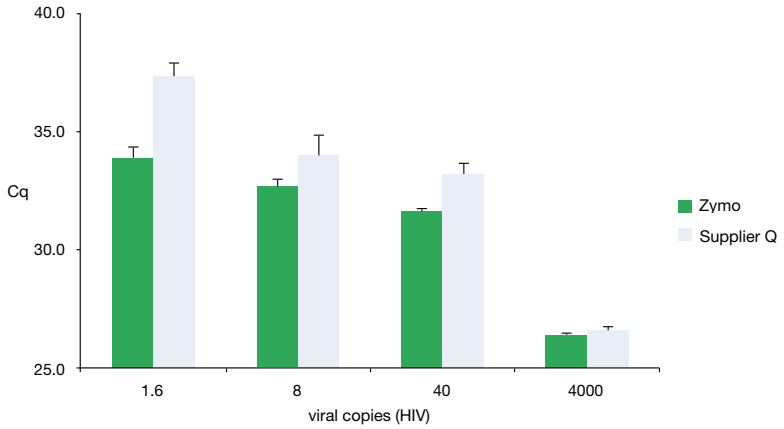
ZR Viral RNA Kits™

Highlights

- Quick recovery of viral RNA from a wide range of sources using Zymo-Spin™ column and plate technologies.
- Column and plate designs allow RNA to be eluted at high concentrations into minimal volumes of RNase-free water.
- Omits the use of organic denaturants and proteases.

Description

The ZR Viral RNA Kit™ and ZR-96 Viral RNA Kit™ provides for rapid isolation of high-quality viral RNA from a wide range of biological sources. It can be used to successfully isolate viral RNA from cell-free body fluids as well as cellular suspensions at concentrations ≤1x10^5 cells/ml. The kit has been rigorously tested and used to isolate viral RNA from samples containing enteroviruses, rhinoviruses, coronaviruses, HIV, HCV, influenza A virus, flaviviruses, measles virus, parainfluenza virus and parvovirus (a ssDNA virus). The eluted RNA is suitable for use in various subsequent procedures including RT-PCR.

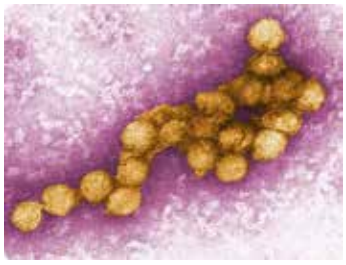


The **ZR Viral RNA Kit™** from Zymo Research ensures high sensitivity viral detection compared to that of Supplier Q. Viral RNA was isolated from plasma samples using the ZR Viral RNA Kit™. Data are the mean (+/- SD) of triplicate RTqPCR measurements.

Product	*Cat. No.*	*Size*
ZR Viral RNA Kit™	R1034 R1035	50 preps. 200 preps.
ZR-96 Viral RNA Kit™	R1040 R1041	2 x 96 preps. 4 x 96 preps.

Use

Cultured Cells..... ✓
Plasma..... ✓
Serum..... ✓
Culture Supernatant..... ✓
Urine..... ✓
Virus..... ✓



Specifications

Binding Capacity..... 10 µg/prep.

ZR Viral RNA Kit™
Format..... Spin Column
Elution Volume..... ≥ 6 µl
Processing Time..... 5 min.

ZR-96 Viral RNA Kit™
Format..... 96-Well
Elution Volume..... ≥ 10 µl
Processing Time..... 15 min.

Available Formats

Zymo-Spin™ IC R1034, R1035 (p. 175)

Zymo-Spin™ I-96 R1040, R1041 (p. 182)

ZR Urine RNA Isolation Kit™

Use

Urine..... ✓
Cells..... ✓
Biological Sediment..... ✓
Microvesicles..... ✓
Exosomes..... ✓

Specifications

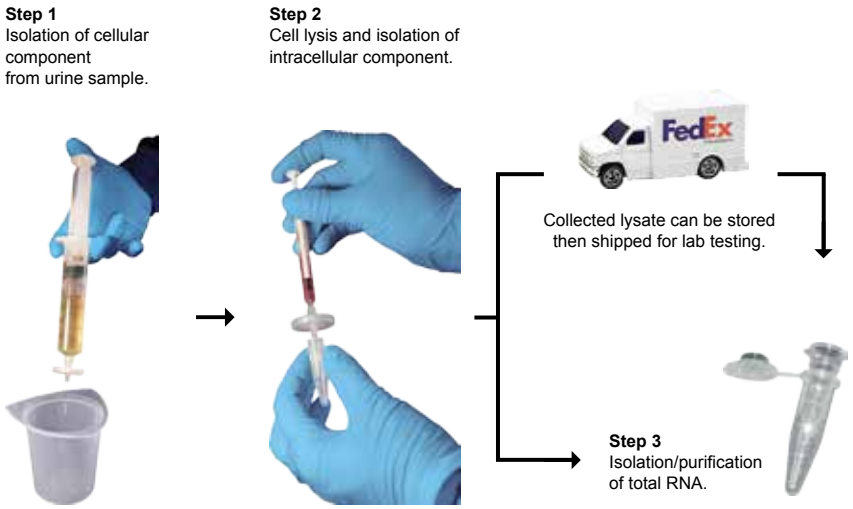
Format..... Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 10 µl
RNA Size Limits..... ≥ 17 nt
Processing Time..... 10 min.

Highlights

- Quick, simple, and reliable recovery of RNA from cells and biological sediment in urine.
- Ideal for recovering total RNA from large volume liquid samples that contain a low concentration of cells.
- Column design allows RNA to be eluted at high concentration into minimal volume.

Description

The ZR Urine RNA Isolation Kit™ is an innovative product designed for the easy, reliable, and rapid isolation of total RNA from cells and biological sediment in urine. The product enables isolation of cells from urine using a syringe fitted with a uniquely-designed syringe filter. Following separation, cells are lysed and the collected lysate may be processed immediately or at a later time following transportation and/or storage. The RNA isolation procedure is simple and can be performed in less than 10 minutes with the technologies featured in the kit. Total RNA isolated with the ZR Urine RNA Isolation Kit™ is ideal for RT-PCR, etc.



Available Format

Zymo-Spin™ IC R1038, R1039 (p. 175)

Product	*Cat. No.*	*Size*
ZR Urine RNA Isolation Kit™	R1038 R1039	20 preps. 50 preps.

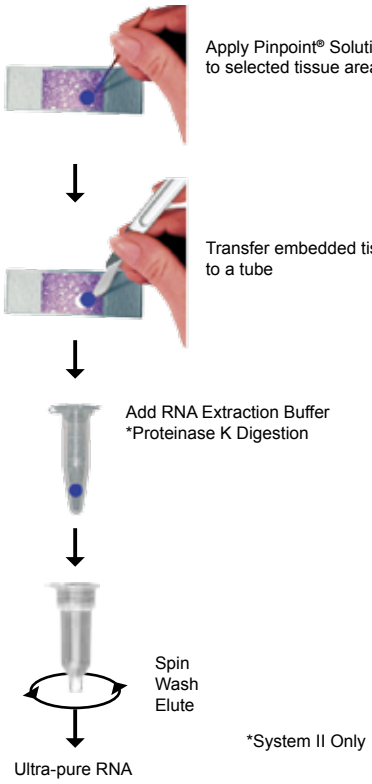
Pinpoint® Slide RNA Isolation Systems

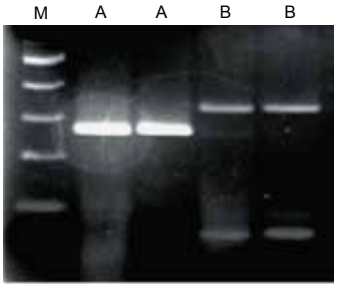
Highlights

- Allows for the isolation of total RNA from fresh and/or FFPE tissue sections.
- Simple procedure combines Pinpoint™ tissue sampling technology with a one-step RNA extraction/purification method.
- Omits the use of organic denaturants.

Description

The Pinpoint® Slide RNA Isolation Systems I and II are innovative products for the isolation of RNA from any targeted area of fresh (Systems I and II) or paraffin-embedded (System II) tissue sectioned onto a glass slide. The systems combine powerful Pinpoint® tissue sampling methodology, a unique single-step RNA extraction/binding buffer, and Zymo-Spin™ column purification technology to yield high quality RNA. Unlike current UV-based methods, these products make isolation of tissue RNA simple and quick. No expensive specialized equipment is needed. Eluted RNA is well suited for subsequent RNA analyses including RT-PCR.





RT-PCR of RNA recovered from human tissue using the Pinpoint® RNA Isolation System. Amplicons (in duplicate) are from A) a human β-actin transcript; B) an arbitrary human transcript from Chromosome 3. M is 100 bp DNA Marker (Zymo Research).

Product	*Cat. No.*	*Size*
Pinpoint® Slide RNA Isolation System I Kit	R1003	50 preps.
Pinpoint® Slide RNA Isolation System II Kit	R1007	50 preps.

Use

Tissue Sections: .....Systems I & II
FFPE Tissue Sections: .....System II

Specifications

Format.....Spin Column
Binding Capacity.....10 µg/prep.
Elution Volume.....≥ 10 µl
RNA Size Limit.....≥ 17 nt

Available Formats

Zymo-Spin™ IC R1003, R1007 (p. 175)

YeaStar™ RNA Kit

Use

Yeast..... ✓
Fungi sensitive to lysis with yeast lytic enzyme (i.e., Zymolyase)..... ✓

Specifications

Format.....Spin Column
Binding Capacity..... 25 µg/prep.
Elution Volume..... ≥ 60 µl
RNA Size Limits..... ≥ 200 nt
Processing Time..... 30 min.

Available Format

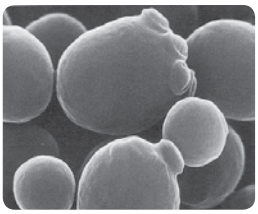
Zymo-Spin™ IIIC R1002 (p. 176)

Highlights

- Recovery of purified RNA from a wide range of fungus species using Zymo-Spin™ column technology.
- Omits the use of glass beads and organic denaturants.
- Eluted RNA is suitable for use in RT-PCR or other RNA-based procedures.

Description

The YeaStar™ RNA Kit provides all the necessary reagents for RNA isolation from a broad spectrum of fungi including: *Aspergillus fumigatus*, *Aspergillus nidulans*, *Aspergillus nivens* var. *aureus*, *Candida albicans*, *Pichia pastoris*, *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*. Generally, the kit can be used for the purification of high-quality, total RNA from any fungus that can be lysed by yeast lytic enzyme. The kit facilitates the purification of 10-25 µg of total RNA from 1-1.5 ml of cultured cells using innovative Zymo-Spin™ column technology.



Digest Yeast
with Zymolyase Lytic Enzyme

Yeast Lysate

Spin
Wash
Elute

Ultra-pure RNA for...
✓ Reverse Transcription
✓ Northern Blotting, etc.

Product	*Cat. No.*	*Size*
YeaStar™ RNA Kit	R1002	40 preps.

Inhibitor-free RNA from Environmental Samples

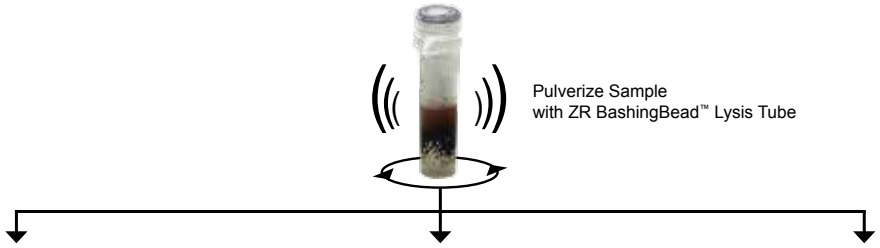
For isolating RNA from tough-to-lyse and environmental samples, Zymo Research provides several products featuring unique BashingBead™ lysis technology (p. 137-138). With these kits, RNA can be isolated from samples otherwise resistant to conventional lysis procedures. These include many solid tissues, plants, seeds, food, arthropods, Gram (+) and Gram (-) bacteria, yeast, filamentous fungi, unicellular and filamentous algae, and protozoa. The result is high yield, high quality RNA that is suitable for downstream applications such as RT-PCR and more.

BashingBead™ Lysis & Environmental RNA Purification

Technology Overview

The BashingBead™ RNA purification kits from Zymo Research are designed for quick recovery of RT-ready total RNA from tough-to-lyse environmental samples. RNA can be isolated from a broad range of samples including plants, seeds, insects and microorganisms in soil, sludge, sediment, or fecal samples. Kits are available in MicroPrep (10 µg/prep) and MiniPrep (50 µg/prep) spin column formats (see illustrations below).

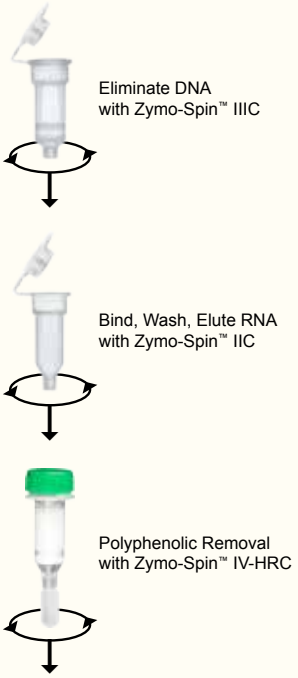
For processing, samples are simply transferred to the provided ZR BashingBead™ Lysis Tubes and then rapidly and efficiently processed by bead beating in specially formulated lysis buffers. Bead beating can be performed in any bead mill, pulverizer, or vortex that can accommodate standard 2.0 ml tubes. Following lysis, RNA is purified using innovative Zymo-Spin™ column technology. Special filtration technologies are implemented for plant, fecal, and soil samples to remove polyphenolic inhibitors that can inhibit reverse transcriptase (RT). The isolation of inhibitor free RNA typically takes about 15 minutes.



Tissue & Insect RNA or Fungal/Bacterial RNA

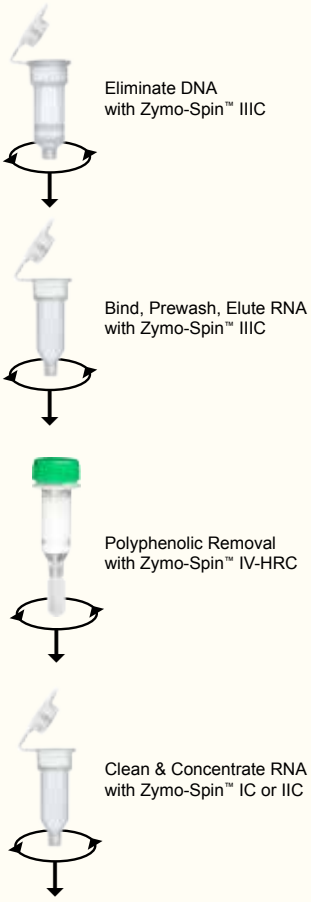
Inhibitor-free RNA

Plant RNA



Inhibitor-free RNA

Soil/Fecal RNA



Inhibitor-free RNA

Our state of the art BashingBeads™ are constructed of the highest quality, most dense ceramic material available today. They are used when thorough sample homogenization/lysis is required by the researcher. RNA shearing by physical and chemical methods are minimized since the beads are fracture resistant and chemically inert. They are unique amongst the lysis matrices offered by other companies for RNA isolation from tough-to-lyse materials.

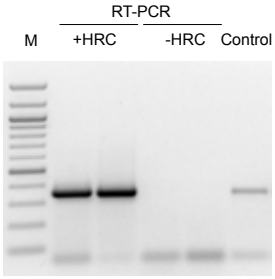
ZR Soil/Fecal RNA MicroPrep™

Highlights

- Simple and efficient method for inhibitor-free RNA from soil and fecal samples.
- Ultra-high density BashingBeads™ can be used with any bead mill, disrupter, or vortex.

Description

The ZR Soil/Fecal RNA MicroPrep™ is designed for the simple, reliable, and rapid isolation of total RNA including small RNAs (≥ 17 nt) from tough-to-lyse bacteria, fungi, protozoa, algae, etc. in various soil types, sludge, sediment, and/or fecal samples. Samples are efficiently homogenized by ZR BashingBead™ Lysis Tubes. Zymo-Spin™ column purification technologies allow for quick removal of genomic DNA and polyphenolic RT/PCR inhibitors (e.g., humic acids, polyphenols, tannins). The result is highly-concentrated, purified RNA that is suitable for subsequent RNA-based methods including RT-PCR, hybridization, etc.



PCR amplification of a eukaryotic transcript post-RT: Total RNA isolated from sludge with or without inclusion of the Zymo-Spin™ IV-HRC spin filter during the ZR Soil/Fecal RNA MicroPrep™ protocol. M is a ZR 1 kb DNA Marker (Zymo Research).

Product	*Cat. No.*	*Size*
ZR Soil/Fecal RNA MicroPrep™	R2040	50 preps.

Use

Soil..... ✓
Sediment..... ✓
Sludge..... ✓
Feces..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of RT Inhibitors..... ✓
Removal of Polyphenolic RT Inhibitors..... ✓

Format..... Spin Column
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 6 µl
Processing Time..... 20 min.

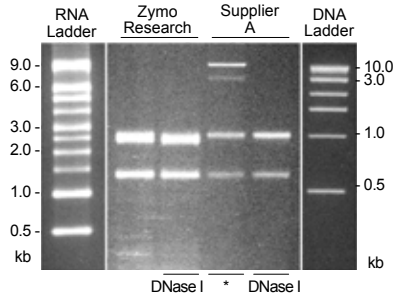
ZR Fungal/Bacterial RNA Kits™

Highlights

- Quick (15 minute) isolation of total RNA from tough-to-lyse bacteria, yeast, and fungi.
- Zymo-Spin™ column technology allows RNA to be eluted into minimal volumes (≥ 6 µl).

Description

The ZR Fungal/Bacterial RNA MicroPrep™ and MiniPrep™ provide for rapid isolation of total RNA from pelleted tough-to-lyse bacteria (e.g., Gram-positive), yeast, and/or fungal cells. Both kits employ ultra-high density BashingBeads™ for sample homogenization and a robust buffer system for total RNA purification (small RNAs included). Using Zymo-Spin™ column technology, the RNA is eluted into volumes as little as 6 µl and suitable for subsequent procedures including RT-PCR. The entire RNA isolation procedure takes less than 15 minutes.



Total RNA was isolated from equal amounts of E.coli cells containing plasmid DNA (pGEM®) using the ZR Fungal/Bacterial RNA MicroPrep™ or kit from Supplier A. The samples were resolved in a 2% (w/v) agarose gel. RNA Millenium Markers (Ambion) and ZR 1 kb DNA Marker (Zymo Research) were used.

* = genomic (> 10 kb) and plasmid (> 3 kb) DNA contamination
DNase I = samples treated with DNase I.

Product	*Cat. No.*	*Size*
ZR Fungal/Bacterial RNA MicroPrep™	R2010	50 preps.
ZR Fungal/Bacterial RNA MiniPrep™	R2014	50 preps.

Use

Gram (+) Bacteria..... ✓
Gram (-) Bacteria..... ✓
Yeast..... ✓
Filamentous Fungi..... ✓
Unicellular Algae..... ✓
Filamentous Algae..... ✓
Protists..... ✓
Soft Tissues (limited)..... ✓
Food..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of RT Inhibitors..... ✓

Format..... Spin Column
Processing Time..... 15 min.

ZR Fungal/Bacterial RNA MicroPrep™
Binding Capacity..... 10 µg/prep.
Elution Volume..... ≥ 6 µl

ZR Fungal/Bacterial RNA MiniPrep™
Binding Capacity..... 50 µg/prep.
Elution Volume..... ≥ 25 µl

ZR Tissue & Insect RNA MicroPrep™

Use

Soft Tissues..... ✓
Solid Tissues..... ✓
Tough-to-Lyse Tissues..... ✓
Tough-to-Lyse Organisms..... ✓
Insects/Arthropods..... ✓
Food..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of RT Inhibitors..... ✓

Format: .....Spin Column
Binding Capacity: ..... 10 µg/prep.
Elution Volume: ..... ≥ 6 µl
Processing Time: ..... 15 min.

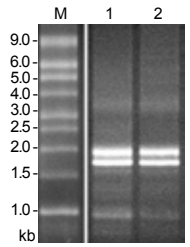
Highlights

- Quick (15 minute) isolation of RNA from insects and tough-to-lyse tissues.
- Omits the use of organic denaturants and proteases.

Description

The ZR Tissue & Insect RNA MicroPrep™ provides for rapid isolation of total RNA from various tissue samples, insect and other arthropod specimens (e.g., mosquitoes, bees, lice, ticks, *Drosophila melanogaster*). Mammalian tissues can also be processed with this kit. The product employs ultra-high density BashingBeads™ for sample homogenization and a robust buffer system delivering total RNA purification (small RNAs included). RNA eluted in DNase/RNase-free water is suitable for subsequent procedures including RT-PCR.

Analysis of ZR Tissue & Insect RNA MicroPrep™. Isolation of total RNA from n=2 *Drosophila* sp. individuals was performed in duplicate (lanes 1 and 2). Samples were processed (2 x 30 sec at 6 m/s) using a FastPrep®-24 Instrument (MP Biomedicals) and resolved alongside (lane M) RNA Millenium™ Markers (Ambion) in a 1% (w/v) non-denaturing agarose gel.



Product	*Cat. No.*	*Size*
ZR Tissue & Insect RNA MicroPrep™	R2030	50 preps.

ZR Plant RNA MiniPrep™

Use

Plant Material..... ✓
Seeds..... ✓
Fruit..... ✓

Specifications

ZR BashingBead™ Lysis..... ✓
Removal of RT Inhibitors..... ✓
Removal of Polyphenolic
RT Inhibitors..... ✓

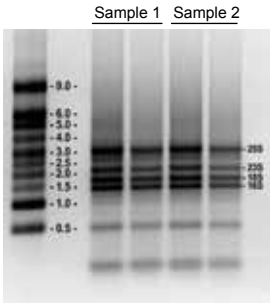
Format..... Spin Column
Binding Capacity..... 50 µg/prep.
Elution Volume..... ≥ 25 µl
Processing Time..... 15 min.

- Quick (15 minute) isolation of inhibitor-free total RNA from a variety of plant tissues.
- Efficient processing with ultra-high density BashingBeads™.
- Omits the use of organic denaturants and proteases.

Description

Total RNA from various plant samples (e.g., leaves, stems, buds, flowers, fruit, seeds, etc.) is efficiently purified using the ZR Plant RNA MiniPrep™. The kit allows for complete removal of DNA and polyphenolic inhibitors. The RNA is eluted into volumes as little as 25 µl and is suitable for use in various downstream procedures including RT-PCR. The entire RNA isolation procedure typically takes about 15 minutes.

Isolation of total RNA from 10 mg of a fresh leaf material (Nicotiana sp.) using the ZR Plant RNA MiniPrep™. Leaves were minced, then processed using a FastPrep®-24 instrument (MP Biomedicals). Samples 1 and 2 were loaded in 2x and 1x volume aliquots, respectively, and resolved in a 1% (w/v) nondenaturing agarose gel. RNA Millenium™ Markers (Ambion) were used as size standards.



Product	*Cat. No.*	*Size*
ZR Plant RNA MiniPrep™	R2024	50 preps.

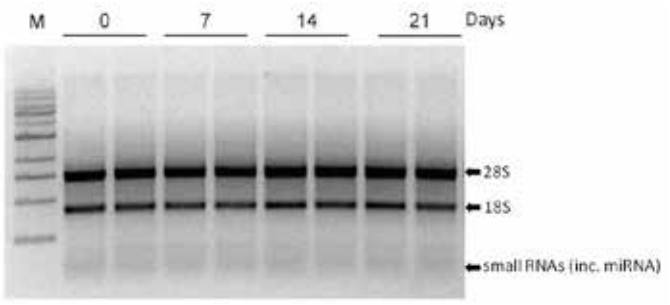
DNA/RNA Shield™

Highlights

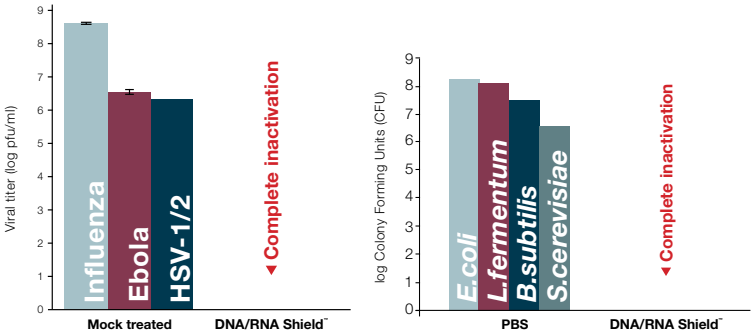
- *Worry-free* storage of samples for up to a month at ambient temperature.
- Inactivates infectious agents (viruses and microbes).
- Preserves genetic integrity and expression profiles of a wide variety of samples including cells, tissues, biological fluids, etc.
- DNA and RNA can be isolated directly without precipitation or reagent removal (compatible with most DNA and RNA purification kits).

Description

DNA/RNA Shield™ ensures nucleic acid stability during sample storage/transport at ambient temperatures. There is no need for refrigeration or specialized equipment. DNA/RNA Shield™ effectively lyses cells and inactivates nucleases and infectious agents, and it is compatible with various collection and storage devices (vacuum tubes, swabs(nasal, buccal, fecal), etc.).



RNA from cells is effectively stabilized in DNA/RNA Shield™ at ambient temperature. Data show RNA from human cells (HCT 116) purified at the indicated time points and visualized on agarose gel.



Virus, bacteria and yeast are effectively inactivated by DNA/RNA Shield™. Samples containing the infectious agent (virus, bacteria, yeast) were treated with DNA/RNA Shield™ or mock (PBS) treated for 5 minutes. Titer (PFU) was subsequently determined by plaque assay. **Validated by:** Influenza A - D. Poole and Prof. A. Mehle, Department of Medical Microbiology and Immunology, University of Wisconsin, Madison; Ebola (Kikwit) - L. Avena and Dr. A. Griffiths, Department of Virology and Immunology, Texas Biomedical Research Institute; HSV-1/2 - H. Oh, F. Diaz and Prof. D. Knipe, Virology Program, Harvard Medical School; E. coli, L. fermentum, B. subtilis, S. cerevisiae – Zymo Research Corporation)

Product	*Cat. No.*	*Size*
DNA/RNA Shield™	R1100-50 R1100-250	50 ml 250 ml
DNA/RNA Shield™ (2X concentrate)	R1200-25 R1200-125	25 ml 125 ml
Bulk reagent and custom fill into any existing collection device		

Use

Sample Stabilization at Ambient Temperatures..... ✓
Ready for Transport..... ✓
Infectious Agent Inactivation..... ✓

Specifications

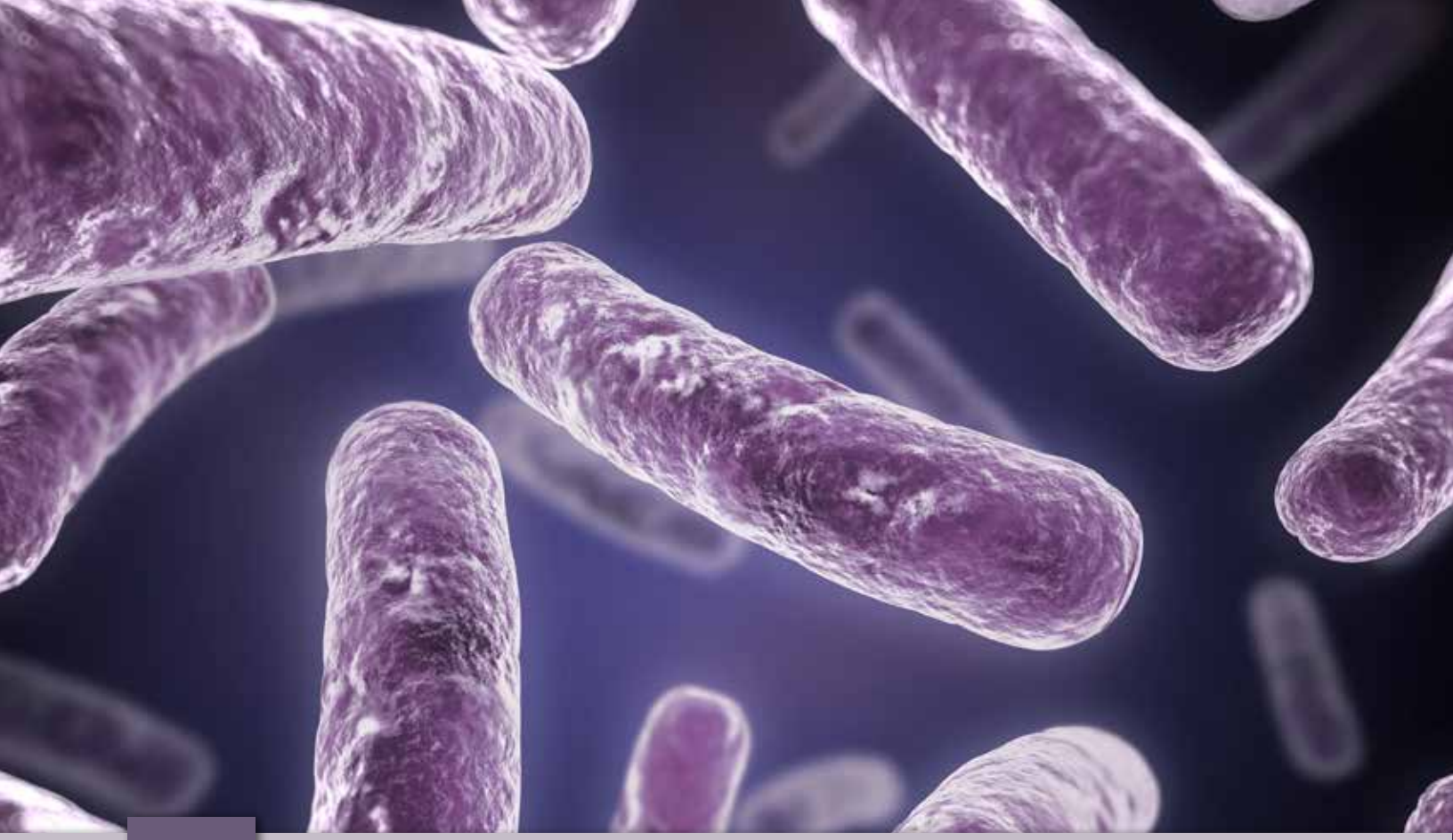
Sample Stabilization
>1 Year at -20° C or lower
Up to 30 days at ambient temp.
Up to 3 days at 37° C

Purification Compatibility

Nucleic acid can be purified directly without reagent removal or precipitation steps.

Compatible with most commercial DNA and RNA purification kits, e.g.

Quick-RNA™
Direct-zol™ RNA
*Quick-g*DNA™
ZR-Duet™ DNA/RNA
Quick-DNA™ Universal Kit

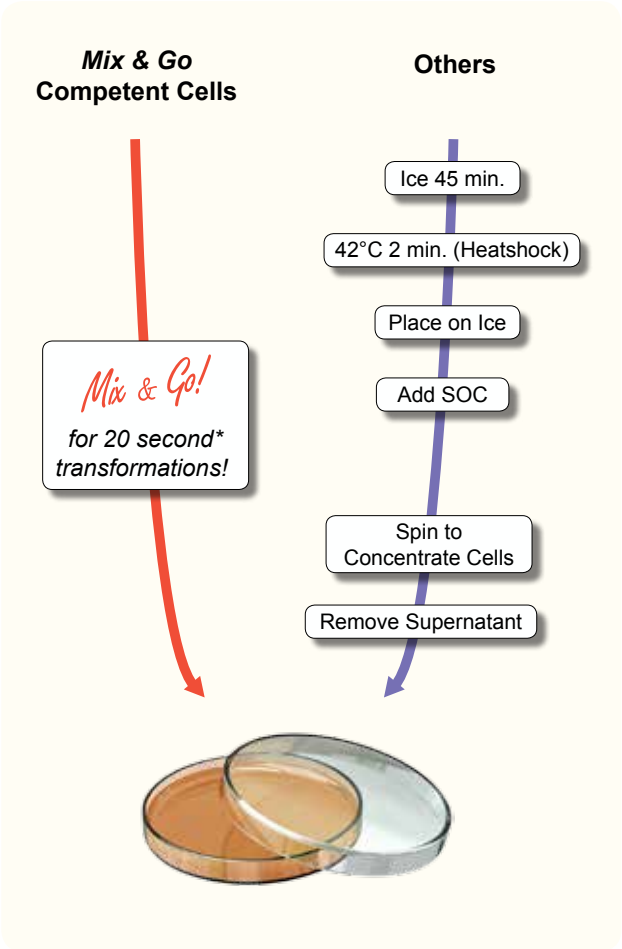


4 Competent *E. coli* & Transformation

Despite the remarkable diversity of research interests in labs throughout the world, most labs have the need to transform *E. coli* for cloning or protein purification. With the needs of the researcher in mind, Zymo Research offers a range of premade chemically competent *E. coli* strains having transformation efficiencies > 10^8 transformants per µg pUC19 DNA. Zymo Research's innovative *Mix & Go* transformation procedure streamlines the process, eliminating long outgrowth times and the need for electroporation. Using premade *Mix & Go* Competent Cells from Zymo Research, a scientist can transform cells in less than 20 seconds (p. 144). Zymo Research also provides reagents that enable researchers to make their own homemade *Mix & Go E. coli*. We have developed a specially formulated medium, ZymoBroth™ (p. 147), that when used to generate chemically competent cells, enhances the transformation efficiency of many K- and B-strains of *E. coli*. With the *Mix & Go* system, increase transformation efficiency and decrease transformation time!

ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®

COMPETENT *E. COLI* TRANSFORMATION



*Ampicillin selection only

Product Guide: *Mix & Go* Competent Cells

	JM109	Zymo 5α	HB101	C600	TG1	Zymo 10B
Specifications						
Strain Background	K-12	K-12	K-12	K-12	K-12	K-12
General Cloning	✓	✓	✓	✓	✓	✓
Plasmid Isolation	✓	✓	✓	✓	✓	✓
Protein Expression						
Production of ssDNA (F'episome)	✓				✓	
Suppression of Amber Mutations (glnV44 or supE44)	✓	✓	✓	✓	✓	
Blue-White Selection (lacZΔM15)	✓	✓			✓	✓
High-quality and Yield of Plasmid Miniprep DNA (endA1)	✓	✓				✓
Reduced Recombination. Insert Stability (recA1 or recA13)	✓	✓				✓
Plasmid Size	Up to 10-15 kb		Up to 10-15 kb	Up to 10-15 kb	Up to 10-15 kb	
Transformation of Large Plasmids (deoR)		Up to 20-32 kb				Up to 20-32 kb
Ampicillin Resistant (bla or ampR)						
Chloramphenicol Resistant (cat or CmR or CamR)						
Tetracycline Resistant (Tn10 or tetR)						
Kanamycin Resistant (KanR)						
Nalidixic Acid Resistant (gyrA96 or NalR)	✓	✓				
Streptomycin Resistant (StrR)			✓			✓
Genotype	F`[traD36 proA+B+ laclq Δ(lacZ)M15] Δ(lac-proAB) glnV44 (supE44) e14- (McrA-) thi gyrA96 (NalR) endA1 hsdR17(rk- mk+) relA1 recA1	F- φ80lacZΔM15 Δ(lacZYA-argF)U169 deoR nupG recA1 endA1 hsdR17(rK-mK+) phoA glnV44 (supE44) thi-1 gyrA96 relA1, λ-	F- Δ(gpt-proA)62 leuB6 glnV44 (supE44) ara-14 galK2 lacY1 Δ(mcrC-mrr) xyl-5 mtl-1 recA13 thi-1 rpsL20 (SmR)	F- [e14-(McrA-) or e14+(McrA+)] thr-1 leuB6 thi-1 lacY1 supE44 rfbD1 fhuA21	F'[traD36 laclq Δ(lacZ) M15 proA+B+] glnV (supE) thi-1 Δ(mcrB-hsdSM)5 (rK- mK- McrB-) thi Δ(lac-proAB)	F- mcrA Δ(mrr-hsdRMS-mcrBC) Φ80lacZΔM15 ΔlacX74 recA1 endA1 araD139 Δ(ara leu) 7697 galU galK rpsL nupG λ-
Catalog Number	T3003	T3007	T3011	T3015	T3017	T3019

Product Guide: XJ Autolysis™ *E. coli* Strains

	XJa Autolysis	XJa (DE3) Autolysis	XJb Autolysis	XJb (DE3) Autolysis
Specifications				
Strain Background	K-12	K-12	B	B
General Cloning	✓	✓		
Plasmid Isolation	✓	✓		
Protein Expression			✓	✓
For General Screening	✓	✓		
For Recombinant Protein Expression			✓	✓
Production of ssDNA (F'episome)	✓	✓		
T7 Promoter Transcription (λDE3)		✓		
Autolysis (ΔaraB::λR)	Autolysis inducible by Arabinose	Autolysis Inducible by Arabinose	Autolysis Inducible by Arabinose	Autolysis Inducible by Arabinose
Suppression of Amber Mutations (glnV44 or supE44)	✓	✓		
Blue-White Selection (lacZΔM15)	✓	✓		
High-quality and Yield of Plasmid Miniprep DNA (endA1)	✓	✓		
Reduced recombination. Insert stability (recA1 or recA13)	✓	✓		
Plasmid Size	Up to 10 kb	Up to 10 kb	Up to 10 kb	Up to 10 kb
Transformation of Large Plasmids (deoR)				
Ampicillin Resistant (bla or ampR)				
Chloramphenicol Resistant (cat or CmR or CamR)	✓	✓	✓	✓
Tetracycline Resistant (Tn10 or tetR)				
Kanamycin Resistant (KanR)				
Nalidixic Acid Resistant (gyrA96 or NalR)				
Streptomycin Resistant (StrR)				
Genotype	F`[traD36 proA+B+ laclq Δ(lacZ)M15] Δ(lac-proAB) glnV44 (supE44) e14- (McrA-) thi gyrA96 (NalR) endA1 hsdR17(rK-mK+) relA1 recA1 ΔaraB::λR, cat (CmR)	F`[traD36 proA+B+ laclq Δ(lacZ)M15] Δ(lac-proAB) glnV44 (supE44)e14- (McrA-) thi gyrA96 (NalR) endA1 hsdR17(rK-mK+) relA1 recA1 ΔaraB::λR, cat (CmR), λ(DE3)	F- ompT hsdSB(rB-mB-) gal dcm ΔaraB::λR, cat (CmR)	F- ompT hsdSB(rB-mB-) gal dcm ΔaraB::λR, cat (CmR), λ(DE3)
Catalog Number	T3021/T5021	T3031/T5031	T3041/T5041	T3051/T5051

Mix & Go Competent Cells

Use

Bacterial Transformations..... ✓
DNA Cloning..... ✓
Blue-white Screening..... ✓

Available Formats

10 x 100 µl Aliquots..... ✓
96 x 50 µl Aliquots..... ✓

Highlights

- *Mix & Go!* transformation procedure with transformation efficiencies of 10^8 - 10^9 transformants/µg of plasmid DNA.
- Simply add DNA and then spread. DNA transformation in as little as 20 seconds!

Description

The *Mix & Go* Competent Cells are premade, chemically competent cells for simple and highly efficient DNA transformation. *Mix & Go* Competent Cells are made chemically competent by a method that completely eliminates the need for heat shocking and related procedures. For transformation, simply mix DNA with cells and then spread onto solid medium − *Mix & Go!* The premade *Mix & Go* Competent Cells are highly efficient (> 10^8 transformants / µg pUC19) and can be used for cloning, sub-cloning, PCR fragment cloning, library construction, etc. *Mix & Go* Competent Cells are supplied as a pack of 10 convenient 100 µl/tube single use aliquots or in a 96-tube format with removable 8-tube strips for your high-throughput transformation needs.


Single Tube Format


96-Tube Format

JM109

Genotype	F`[traD36 proA$^+$B$^+$ lacI^q Δ(lacZ)M15] Δ(lac-proAB) glnV44 (supE44) e14$^-$ (McrA$^-$) thi gyrA96 (Nal^R) e ndA1 hsdR17(r_k^- m_k^+) relA1 recA1

Cat. No.	Size
T3003	10 x 100 µl aliquots (10 tubes)
T3005	96 x 50 µl aliquots (96-well plate)

Zymo 5α

Genotype	F$^-$φ80lacZΔM15 Δ(lacZYA-argF)U169 deoR nupG recA1 endA1 hsdR17(r_K^- m_K^+) phoA glnV44 (supE44) thi-1 gyrA96 relA1, λ-

Cat. No.	Size
T3007	10 x 100 µl aliquots (10 tubes)
T3009	96 x 50 µl aliquots (12 x 8-tube strips)
T3010	96 x 50 µl aliquots (96-well plate)

HB101

Genotype	F$^-$ Δ(gpt-proA)62 leuB6 glnV44 (supE44) ara-14 galK2 lacY1 Δ(mcrC-mrr) xyl-5 mtl-1 recA13 thi-1 rpsL20 (Sm^R)

Cat. No.	Size
T3011	10 x 100 µl aliquots (10 tubes)
T3013	96 x 50 µl aliquots (96-well plate)

C600

Genotype	F$^-$ [e14$^-$(McrA$^-$) or e14$^+$(McrA$^+$)] thr-1 leuB6 thi-1 lacY1 glnV44 (supE44) rfbD1 fhuA21

Cat. No.	Size
T3015	10 x 100 µl aliquots (10 tubes)

TG1

Genotype	F'[traD36 lacI^q Δ(lacZ) M15 proA$^+$B$^+$] glnV (supE) thi-1 Δ(mcrB-hsdSM)5 (r_K^- m_K^- McrB$^-$) thi Δ(lac-proAB)

Cat. No.	Size
T3017	10 x 100 µl aliquots (10 tubes)

Zymo 10B

Genotype	F- mcrA Δ(mrr-hsdRMS-mcrBC) Φ80lacZΔM15 ΔlacX74 recA1 endA1 araD139 Δ(ara leu) 7697 galU galK rpsL nupG λ-

Cat. No.	Size
T3019	10 x 100 µl aliquots (10 tubes)
T3020	96 x 50 µl aliquots (96-well plate)

XJ Autolysis™ *E. coli* Strains

Highlights

- Straightforward transformation procedure with up to 10^8 - 10^9 transformants/µg plasmid.
- Simple, fast, and controlled autolysis of *E. coli*.
- Available with DE3 lysogen for T7 promoter transcription.

Description

XJ Autolysis™ *E. coli* strains are a new alternative for bacterial transformation and lysis. These strains are efficiently lysed following arabinose-induced expression of the bacteriophage λ endolysin protein, coupled to a single freeze-thaw cycle. The strains simplify protein expression and purification, and are also applicable for nucleic acid purification. They are also available with a DE3 lysogen encoding the T7 polymerase for expressing recombinant proteins driven by the T7 promoter.

	XJa Autolysis™ (*E. coli*, K-strain JM109)	XJb Autolysis™ (*E. coli*, B-strain BL21)
Cell Growth	Grows well, especially when medium is supplemented with 1 mM Mg^{2+}.	A very robust strain, reaching higher OD's than *E. coli* K-strains.
Autolysis	Lyses easily. The parent strain JM109 itself will release about 20% of cellular protein after one freeze-thaw cycle. This strain will lyse in a wide range of buffer conditions.	XJb lysis efficiency is 10-20 % lower than XJa. For optimal lysis, more care needs to be taken when selecting the lysis buffer. However, even very low concentrations of a detergent may improve lysis significantly.
Protein Expression	Suitable for general screening, but proteases may degrade small or otherwise unstable recombinant proteins.	XJb is ideal for recombinant protein expression. It lacks Lon and OmpT proteases, leading to higher protein yields.
DNA Extraction	This strain is EndA$^-$ and yields high quality DNA preparations.	XJb is not optimal for DNA extraction.
DNA Stability	The RecA$^-$ mutation in XJa stabilizes repetitive DNA sequences.	This strain is RecA positive.
Genotype	F`[traD36 proA$^+$B$^+$ lacI^q Δ(lacZ) M15] Δ(lac-proAB) glnV44 (supE44) e14$^-$ (McrA$^-$) thi gyrA96 (Nal^R) endA1 hsdR17(r_K^- m_K^+) relA1 recA1 ΔaraB::λR, cat (Cm^R)	F$^-$ ompT hsdS_B(r_B^- m_B^-) gal dcm ΔaraB::λR, cat (Cm^R)

Product	*Cat. No.*	*Size*
XJa Autolysis™	T5021	1 glycerol stock, 1 ml 500X L-Arabinose
	T3021	10 x 100 µl *Mix & Go* Competent Cells, 1 ml 500X L-Arabinose
XJa (DE3) Autolysis™	T5031	1 glycerol stock, 1 ml 500X L-Arabinose
	T3031	10 x 100 µl *Mix & Go* Competent Cells, 1 ml 500X L-Arabinose
XJb Autolysis™	T5041	1 glycerol stock, 1 ml 500X L-Arabinose
	T3041	10 x 100 µl *Mix & Go* Competent Cells, 1 ml 500X L-Arabinose
XJb (DE3) Autolysis™	T5051	1 glycerol stock, 1 ml 500X L-Arabinose
	T3051	10 x 100 µl *Mix & Go* Competent Cells, 1 ml 500X L-Arabinose

Use

Recombinant Protein Expression... ✓

Available Formats

Glycerol Stock..... ✓
10 x 100 µl Aliquots of Frozen Competent Cells..... ✓

Mix & Go E. coli Transformation Kit & Buffer Set

Use

Preparation of Competent *E. coli* ✓

Specifications

Reagents for Competent Cell Preparation..... ✓
ZymoBroth™ Growth Medium*..... ✓

*Not included in *Mix & Go E. coli* Transformation Buffer Set

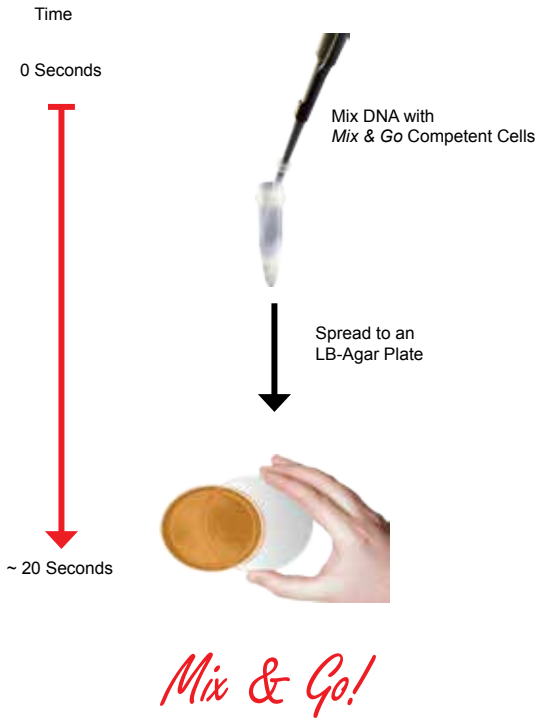
Highlights

- Make your own highly efficient chemically competent cells: 10^8-10^9 transformants/µg of plasmid DNA for most common lab strains.
- No heat shock or related procedures: simply add DNA and spread onto a plate - *Mix & Go!*

Description

The *Mix & Go E. coli* Transformation Kit and *Mix & Go E. coli* Buffer Set are convenient methods for the preparation of competent *E. coli* cells for simple and highly efficient DNA transformation. The *Mix & Go* method completely eliminates the requirement for heat shocking and related procedures. Instead, *Mix & Go* bacterial transformation can be performed by adding DNA to *Mix & Go* Competent Cells and spreading onto a plate. Transformation efficiencies are typically on the order of 10^8-10^9 transformants/µg plasmid DNA with most *E. coli* strains.

Uniquely formulated reagents make it easy to generate *Mix & Go* Competent Cells from current *E. coli* strains that are available in the laboratory. Simply grow the *E. coli* strain of your choice, wash, then resuspend the cells in the provided buffers. The cells are now transformation ready! The *Mix & Go E. coli* Transformation Kit includes all buffers and ZymoBroth™ medium to generate 20 ml of *Mix & Go* Competent Cells. The *Mix & Go E. coli* Transformation Buffer Set includes all buffers that are required to generate 60 ml of *Mix & Go* Competent Cells, and the medium (broth) is supplied by the user.



Product	*Cat. No.*	*Size*
Mix & Go E. coli Transformation Kit	T3001	up to 20 ml
Mix & Go E. coli Transformation Buffer Set	T3002	up to 60 ml

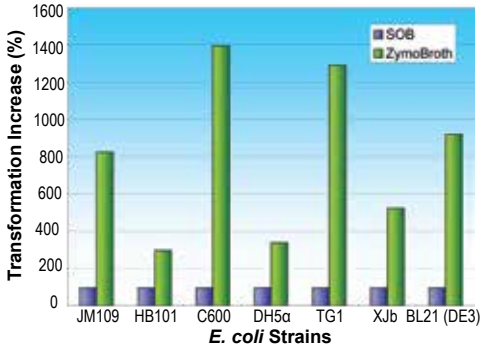
ZymoBroth™

Highlights

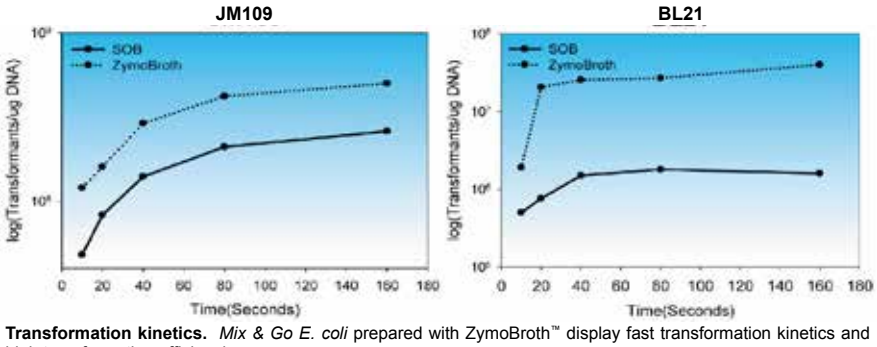
- Uniquely formulated growth medium for making highly competent *E. coli* for DNA transformation.
- Choice growth medium for difficult-to-transform *E. coli* strains.

Description

ZymoBroth™ (ZB) is a specially formulated growth medium used for the preparation of highly competent *E. coli* cells for DNA transformation. When compared to classic SOB growth medium, ZymoBroth™ dramatically increases transformation efficiency, typically on the order of 5 - 100 fold (depending on the *E. coli* strain). As part of our popular *Mix & Go E. coli* Transformation Kit, ZB enables researchers to generate their own homemade *Mix & Go E. coli* for DNA transformation. ZB medium has been tested on a wide range of *E. coli* strains. Our data indicate that ZB medium stimulates the transformation efficiency of all *E. coli* strains tested, including K12 derivatives (Such as JM109, HB101, etc.) and B strain derivatives (such as BL21, etc.).



Transformation efficiencies of strains generated with ZymoBroth™ and SOB media. ZymoBroth™ dramatically increases the transformation efficiencies of a broad range of *E. coli* strains. Generally, ZymoBroth™ enhances transformation efficiencies better for difficult-to-transform strains.



Transformation kinetics. *Mix & Go E. coli* prepared with ZymoBroth™ display fast transformation kinetics and high transformation efficiencies.

Product	*Cat. No.*	*Size*
ZymoBroth™	M3015-100	100 ml
	M3015-500	500 ml

Use

Chemically Competent *E. coli* Preparation..... ✓

Rattler™ Plating Beads

Use

Spreading Inocula on Solid Media (plates)..... ✓

Specifications

Material:
Solid, glass 4.5 mm be ads can be washed, autoclaved, and reused.

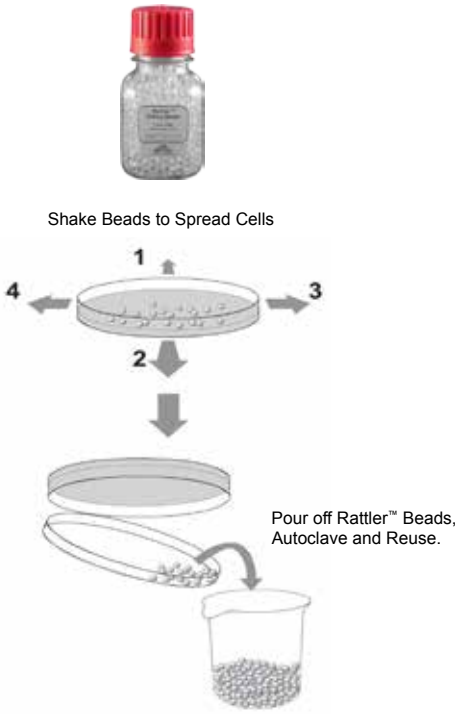
Packaging:
Polycarbonate, autoclavable wide mouth bottle. The bulk format is supplied non-sterile as a 25 kg bag.

Highlights

- Sterile 4.5 mm glass plating beads that are convenient and easy to use.
- No flaming required.
- Quickly spread cells evenly over the entire growth surface of a plate.
- Ideal when plating yeast for two-hybrid screens.

Description

Zymo Research offers Rattler™ Plating Beads to save the researcher time and effort when plating bacteria or yeast. The sterile glass beads are simply poured onto solid plated medium together with a liquid cell suspension, and the mixture is shaken to distribute the cells evenly over the medium's surface. This allows for numerous plates to be processed quickly and efficiently. Pour the Rattler™ beads onto a series of plates, stack, and shake simultaneously in a side to side motion. The beads can be easily removed following inversion of the plates and pouring off from the plate lids. Using the Rattler™ Plating Beads is simple, easy, and saves you time. The beads come sterile in polycarbonate bottles and can be reused following cleaning and autoclaving.



Product	*Cat. No.*	*Size*
Rattler™ Plating Beads - 230 g/bottle	S1001 S1001-5	1 bottle 5 bottles
Rattler™ Plating Beads - bulk format (non-sterile)	S1001-B	25 kg

FAQs about *Mix & Go* Competent Cells

Premade Mix & Go Competent Cells

Will performing heat shock improve my transformation efficiency?
It may be beneficial if making a library, otherwise the heat shock is not needed.

Can my volume of DNA input be greater than the recommended <5%?
The efficiency can decrease several fold as the volume increases. If your DNA is too dilute, we recommend using the DNA Clean & Concentrator™ (see p. 60) prior to transformation.

Mix & Go Transformation Kit and Buffer Set

I'm working with a wild-type strain of bacteria, will it work and how can I boost transformation efficiency?
This system is optimized for use with lab strains (K12 and B derivatives). Wild type strains generally have low efficiencies. Here are some tips for boosting efficiency:

1. ZymoBroth: *E. coli* cells prepared with this optimized growth medium exhibit faster transformation kinetics and higher transformation efficiencies. This may be as high as several fold to a log increase.
2. Boosting Transformation:
   a. Heat Shock: Incubate with DNA on ice for 30 minutes, followed by 5 minutes at 37°C. This is a mild heat shock step and has no detrimental effects, it will only improve transformation efficiency.
   b. Outgrowth: After the transformation mixture has incubated, add 4 volumes of SOC and incubate for 1 hour at 37°C with gentle shaking at 200-300 rpm. Afterwards, spread the mixture directly onto pre-warmed culture plates.

Antibiotic	Description	Resistance	Working Concentration (For *E. coli*)	Page
Ampicillin (Ap)	For Gram (+) and (-) bacteria. Penicillin derivative that prevents bacterial cell wall synthesis.	Resistance to ampicillin is conferred by the *bla* gene which encodes β-lactamase that cleaves the β-lactam bond of the antibiotic.	20 - 100 µg/ml	168
Chloramphenicol (Cm)	For Gram (+) and (-) bacteria and some mycobacteria. Chlorampenicol inhibits bacterial protein synthesis by binding the 50S ribosomal subunit.	Resistance to chloramphenicol is conferred by the *cat* gene which encodes an acetyltransferase that acetylates and inactivates the antibiotic.	20 µg/ml	168
Kanamycin (Km)	For Gram (+) and (-) bacteria. Kanamycin binds to 70S ribosomes resulting in dysfunctional translation of mRNA.	Resistance to kanamycin is conferred by an aminoglycoside phosphotransferase that modifies the antibiotic, preventing its interaction with ribosomes.	30 µg/ml	168
Tetracycline (Tc)	For Gram (+) and (-) bacteria. Tetracycline inhibits bacterial protein synthesis by binding the 30S ribosomal subunit.	Resistance to tetracycline is conferred by the *tet* gene product that alters the bacterial cell membrane and transport of the antibiotic into the cell.	10 - 20 µg/ml	168

5 Yeast Research

At Zymo Research, our first products were those for yeast. This inspired the three "budding yeast" that are part of our company's logo today. In addition to those technologies described in previous chapters for yeast DNA and RNA purification, we also provide yeast growth and transformation products. For transformation of yeast and fungus, a uniquely formulated YPD medium (YPD Plus™) increases the transformation efficiencies for most yeast strains by ≥ 50%. Our Frozen-EZ Yeast Transformation II Kit™ has been designed to make yeast transformation easier and more efficient compared to conventional methods. We also provide several specialty products for yeast researchers that include α-Factor/a-Factor Mating Pheromone and 5-Fluoroorotic Acid. The Zymolyase and Yeast Protein Kit remain important reagents for yeast lysis and protein purification, respectively.

ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®

YEAST RESEARCH

YEAST LYTIC ENZYME

YEAST PLASMID AND DNA PURIFICATION

YEAST TRANSFORMATION

YEAST MATING PHEROMONE

SPECIALTY CHEMICALS AND OTHERS

Zymolyase - Yeast Lytic Enzyme

Use

Spheroplast/Protoplast Formation... ✓
Yeast Cell Fusion..... ✓
Yeast Transformation..... ✓
Other Fungi..... ✓

Specifications

Enzyme Concentration..... 5 U/µl
Total Protein Concentration:
10 - 15 mg/ml
Storage.....-70°C

Unit Definition

One lytic unit (U) is defined as a 10% decrease in O.D. at 800 nm for 30 min.

Highlights

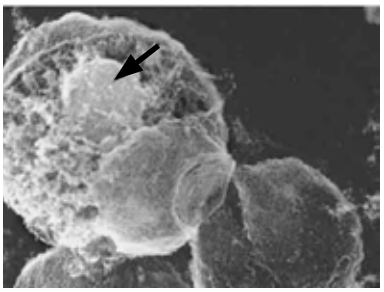
- Zymolyase (100T equivalent) prepared from *Arthrobacter luteus* (essential enzyme activities: β-1,3-glucan laminaripentao-hydrolase and β-1,3-glucanase).
- Provided lyophilized together with a buffer for reconstitution.
- Also available combined with RNase A (R-Zymolyase).

Description

Digestion of yeast and fungal cell walls is necessary for many experimental procedures including spheroplasting, immunofluorescence, transformation, protein purification, and others. The use of lytic enzymes like Zymolyase is routinely used for digestion. The Zymolyase from Zymo Research is prepared from *Arthrobacter luteus*, lyophilized, and packaged with a resuspension buffer. The buffer has been optimized to confer maximal levels of enzymatic activity. The main activities of the enzyme are β-1,3 glucanase and β-1,3-glucan laminaripentao-hydrolase, which hydrolyze glucose polymers at the β-1,3-glucan linkages releasing laminaripentaose as the principal product. Optimal Zymolyase activity is at 30°-37°C; lytic activity ceases at higher temperatures.

R-Zymolyase includes 0.5 U/µl RNase A when reconstituted.

Susceptible fungal genera: *Asbya, Candida, Debaryomyces, Eremothecium, Endomyces, Hansenula, Hanseniaspora, Kloekera, Kluyveromyces, Lipomyces, Metschikowia, Pichia, Pullularia, Saccharomyces, Saccharomycodes, Saccharomycopsis, Schizosaccahromyces, Torulopsis.*



Zymolyase can be used for enzymatic digestion of yeast glycan coats and for spheroplast formation. The arrow indicates the nucleus and intracellular components of a spheroplast through a partially digested plasma membrane.*

*Source: A protocol for isolation and visualization of yeast nuclei by scanning electron microscopy (SEM). Elena Kiseleva, Terry D Allen, Sandra A Rutherford, Steve Murray, Ksenia Morozova, Fiona Gardiner, Martin W Goldberg & Sheona P Drummond. Nature Protocols 2, 1943 - 1953 (2007) Published online: 9 August 2007 doi:10.1038/nprot.2007.251

Product	*Cat. No.*	*Size*
Zymolyase	E1004 E1005	1,000 U 2,000 U
R-Zymolyase	E1006	1,000 U

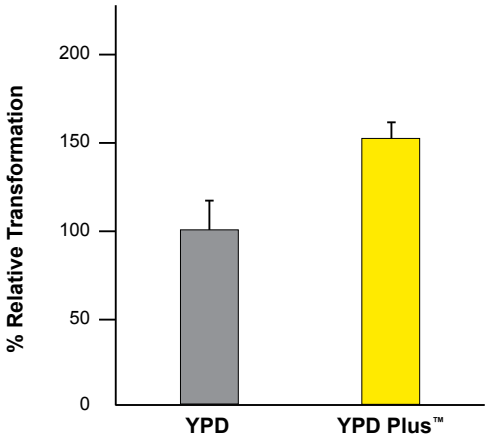
YPD Plus™

Highlights

- Specialized medium used for yeast outgrowth that increases transformation efficiency > 50% when compared to conventional YPD medium.
- Ideal for yeast strains exhibiting poor growth characteristics.

Description

The outgrowth step in yeast transformation protocols is often critical for increasing overall yeast transformation efficiencies. This is useful when attempting to maximize transformation efficiencies for library screening or transforming yeast with multiple plasmids. YPD Plus™ is a specially formulated to increase yeast transformation efficiencies by > 50%. YPD Plus™ is recommended for mutant yeast strains exhibiting poor growth characteristics that are not amenable to transformation. Simply supplement a yeast transformation reaction mixture with YPD Plus™ to achieve consistent increases in yeast transformation efficiencies.



Comparison of YPD vs. Zymo Research's YPD Plus™ medium. Yeast transformations were performed with outgrowth performed in either standard YPD or YPD Plus™ medium. The relative percentage of transformants is shown in the graph to the left. Each plot represents the relative transformation efficiency averaged from six individual transformations.

Use

Yeast Transformation & Outgrowth..... ✓

Product	*Cat. No.*	*Size*
YPD Plus™	Y1003-50 Y1003-100	50 ml 100 ml

Frozen-EZ Yeast Transformation II™ Kit

Use

Competent Yeast Cell Preparation..... ✓

Compatibility:

- *S. cerevisiae*
- *S. pombe*
- *C. albicans*
- *P. pastoris*

Highlights

- Yeast cells with high transformation efficiencies can be prepared in under 10 minutes.
- Simple method for transforming yeast with single or multiple plasmids in less than 1 hour.
- No carrier DNA required.

Description

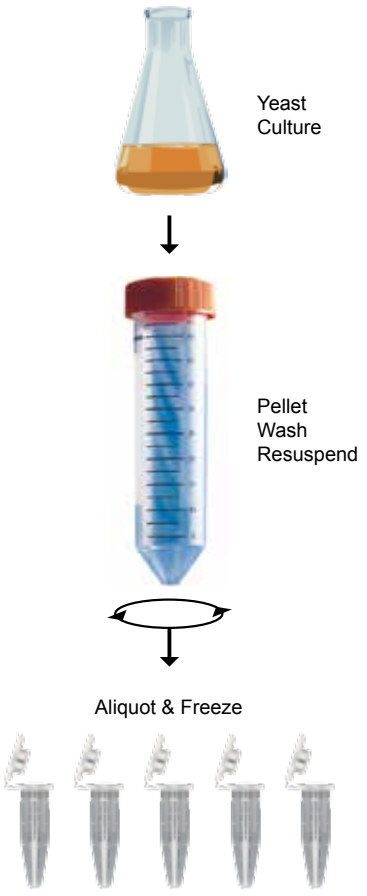
The Frozen-EZ Yeast Transformation II™ Kit is designed to make yeast transformations and library screening easier and more efficient than currently available methods. The yeast cells can be used immediately for transformation or can be stored (i.e., ≤ -70°C) for use at a later time. Yeast prepared with this kit can be transformed with both circular and linear DNAs. Also, the Frozen-EZ Yeast Transformation II™ Kit can be used with other fungi including *C. albicans, S. pombe,* and *P. pastoris*.

Specifications

Transformation Efficiency:
10^5 - 10^6 cfu/µg

Transformation DNA Input:
0.2 - 1.0 µg

Competent Cell Stability:
≥1 year at -70°C



Product	*Cat. No.*	*Size*
Frozen-EZ Yeast Transformation II™ Kit	T2001	120 rxns.

α-Factor Mating Pheromone

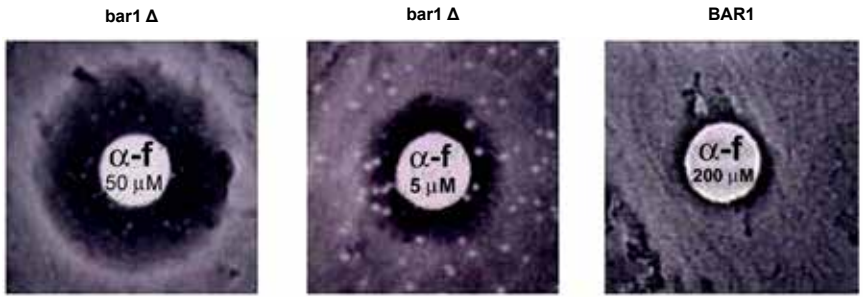
Highlights

- Aqueous solution of yeast α-factor mating pheromone.

Description

When yeast "a" and "α" cells encounter mating pheromones of the opposite cell type they induce genes necessary for mating, arrest the cell cycle in G1, alter cell surface and nuclear determinants, and also undergo dramatic morphological elongation into pear shapes, affectionately termed "schmooing". These alterations prepare the yeast cells for mating and fusion to form stable diploids. The a/α diploids are not responsive to mating pheromone of either type, but can be induced to undergo meiosis via nutrient deprivation. The use of yeast mating pheromones has pioneered the study of the cell cycle, cellular morphology, transcriptional induction, as well as signal transduction pathways.

Zymo Research provides the α-factor peptide mating pheromone as a ready to use liquid that has been optimized for both activity and stability and is guaranteed to retain biological function through multiple freeze-thaw cycles.



Activity test of α-Factor. α-Factor peptide pheromone (10 µl) was applied to sterile filters on a lawn of MATa cells, which were either wild-type for the BAR1 (200 µM, right) protease or bar1 Δ (50 µM, left; 5 µM, center). Sensitivity to the α-factor is evident as the zone of clearing (G_1 arrested cells). Cells that have the BAR1 protease deletion are more sensitive to α-Factor than BAR-1-protease-positive wild strain which require ~20 - 50X more pheromone to arrest the cells.

Product	*Cat. No.*	*Size*
α-Factor Mating Pheromone	Y1001	240 µl

Use

Yeast Mating Induction..... ✓
G1 Phase Arrest..... ✓

Specifications

Concentration:
10 mM in 0.1 M sodium acetate, pH 5.2, (i.e., 4 mg /240 µl).

Recommended Usage Concentration:
~5 µM (bar1 Δ) to 100 µM (BAR1).

Peptide Sequence:
TRP-LEU-GLN-LEU-LYS-PRO-GLY-GLN-PRO-MET-TYR.

Molecular Weight..... 1684.0

Activity Test..... G1 arrest.

Purity..... > 98% by HPLC.

Storage..... -20°C.

a-Factor Mating Pheromone

Highlights

- Aqueous solution of yeast a-factor mating pheromone.

Description

a-Factor is one of the two mating pheromones in baking yeast. It is the "opposite" sex of mating pheromone α-Factor (alpha-factor). When yeast a and α cells encounter the opposite mating pheromones, they induce genes necessary for mating, arrest the cell cycle in G1, altering cell surface and nuclear determinates, and also cause morphological changes.

Activity test of a-factor: a-Factor, diluted with 0.5mg/ml BSA, was applied to sterile filters on a lawn of MAT α cells, which was bar1 Δ at 0.5ng/ul. Sensitivity to the a-factor is evident as the zone of clearing (G1arrested cells).

Product	*Cat. No.*	*Size*
a-Factor Mating Pheromone	Y1004-500	500 µl

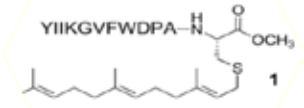
Use

Yeast Mating Induction..... ✓
G1 Phase Arrest..... ✓

Specifications

Concentration:
1 mg/ml in methanol

Peptide Sequence:



Molecular Weight..... 1630

Activity Test..... G1 arrest.

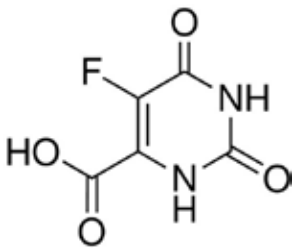
Purity..... > 80% by HPLC.

Storage..... -20°C.

5-Fluoroorotic Acid (5-FOA)

Use

Yeast Counter-selection..... ✓
Yeast Two-hybrid Screen..... ✓
Plasmid Curing..... ✓
Plasmid Shuffling..... ✓
Allelic Replacement..... ✓



Specifications

Appearance:
White crystalline powder.

Molecular Weight.....174.0

Method for Determining Identity:
TLC, melting point and lot comparison.

Purity:
Estimated to be greater than 98% by TLC, melting point, and lot comparison.

Solubility:
50 mg in 1 ml (1:1 NH_4OH: H_2O) with gentle heating, > 100 mg/ml DMSO.

Storage:
Store in freezer.

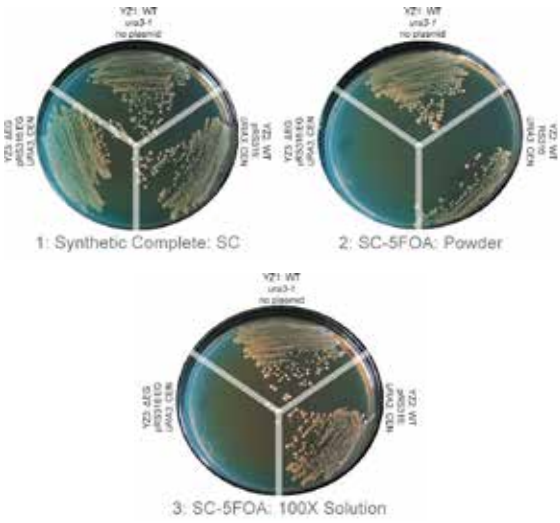
Highlights

- Yeast genetic counter-selection agent.
- Available as an ultra-pure powder (> 98% purity) or as a solution in DMSO.

Description

Using 5-Fluoroorotic Acid (5-FOA) for the counter-selection of yeast is a common genetic screening method. Curing yeast strains of plasmids, plasmid shuffling, allelic replacement, and two-hybrid screens are methods that can employ the use of 5-FOA. Otherwise nontoxic to yeast, 5-FOA is converted to the toxic form (i.e., 5-flurouracil) in strains expressing the functional URA3 gene coding for orotine-5′-monophosphate decarboxylase that is involved in the synthesis of uracil. Yeast strains that are phenotypically Ura^+ become Ura^- and 5-FOA^R after selection.

The question of 5-FOA solubility is often raised by researchers using ultra-pure (> 98%) 5-FOA powder because of its insolubility in water. Thus, we provide a 100X concentrated (100 mg/ml) 5-FOA solution in DMSO. This has been tested and validated on the basis of counter selection activity (see below).



Counter selection of yeast using 5-FOA. Yeast strains that are auxotrophic for uracil (ura3-1) were tested for their ability to grow on 5-FOA containing media. Three strains were tested: wt alone (YZ1), wt with a URA3 marked low copy plasmid (YZ2), and a mutant strain with a deletion of an essential gene (ΔEG) that could not lose a complementing URA3 plasmid (YZ3).

From left to right, top to bottom are synthetic complete glucose medium (SC): 1. SC, synthetic complete no 5FOA; 2. Standard - SC-5-FOA (SC-5-FOA made from ultra-pure 5-FOA powder, 1 g/liter) 3. SC-5-FOA made from 100X 5-FOA solution.

For each plate, Top: Yeast strain: YZ1 wild-type, Ura- (wt, ura-3-52), Right: Yeast strain: YZ2, wt carrying a low copy, URA3 plasmid alone, and Left: Yeast strain: YZ3: ΔEG, containing the complementing plasmid (pRS316: EG, URA3, CEN). The counter selection against strain YZ3 was evident for all media containing 5-FOA with no 5-FOA^R colonies evident (see left panels, YZ3: in plates 2, and 3). Cells from control strains YZ1 and YZ2 were able to grow on 5-FOA media.

Product	*Cat. No.*	*Size*
5-FOA (powder)	F9001-1 F9001-5	1 g 5 g
100X 5-FOA (liquid)	F9003	10 ml

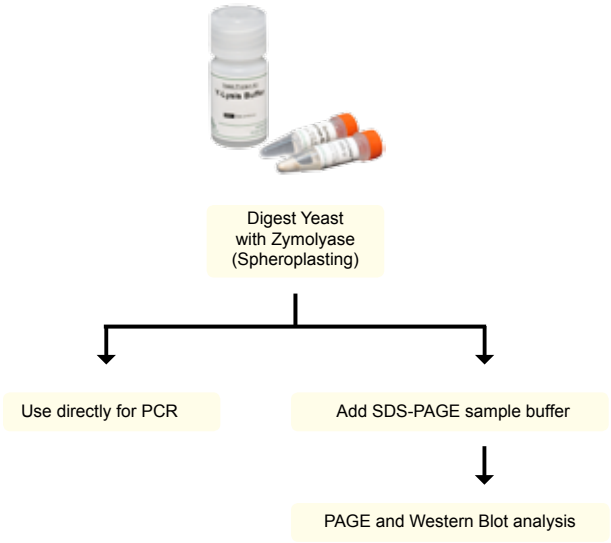
Yeast Protein Kit™

Highlights

- Convenient, rapid method for efficient lysis of yeast for downstream protein and DNA analyses.
- The procedure can be used for any fungal species susceptible to yeast lytic enzyme (Zymolyase) digestion.

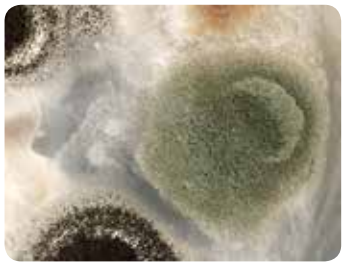
Description

The Yeast Protein Kit™ is a simple and convenient method for the rapid, thorough lysis of yeast cells. The kit has been optimized for use with *S. cerevisiae* and *C. albicans* but can be used for any fungal species that is susceptible to yeast lytic enzyme (Zymolyase) digestion. The digestion procedure effectively generates spheroplasts of yeast cells, making them ideal for both protein and DNA analyses including Western blotting and PCR, respectively.



Use

Yeast Cell Lysis..... ✓
Protein Analysis..... ✓
DNA Analysis..... ✓



Product	*Cat. No.*	*Size*
Yeast Protein Kit™	Y1002	200 preps.

6 Protein Expression & Enzymes

Although the expression of recombinant proteins in *E. coli* is a routine procedure, high level expression or overexpression is not always attainable. However, those at Zymo Research have designed products to exploit the fact that high levels of protein expression can be consistently obtained when the processes of cell expansion and protein expression are kept separate. This is easily achieved with the use of the Dual Media Set™ where the over-expression of many proteins can be reliably controlled. In conjunction with the Dual Media Set™, our XJ Autolysis™ expression strains (p. 145) are ideal hosts for recombinant protein expression. With these strains, bacterial cell lysis is complete after a single freeze/thaw cycle. Researchers will find the single step lysis procedure simple, reproducible, and faster than conventional methods.

The His-Spin Protein Miniprep™ provides researchers a simple, fast method for His-tagged protein purification. The procedure is based on innovative protein purification chemistry as well as state of the art Zymo-Spin™ column technology. Up to 1 mg of His-tagged protein can be purified per preparation in as little as 5 minutes. The purified protein can be used directly in enzymatic assays, protein biochemical analyses, SDS-PAGE, and other applications. The straightforward *spin-wash-elute* protocol ensures results are obtained in minutes, not hours.

In addition to epigenetic enzymes presented in Chapter 1 (p. 38-44), Zymo Research offers several others, including DNase I (RNase-free), Proteinase K, RNase A, and Zymolyase that are detailed in this chapter.

ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®

PROTEIN EXPRESSION & ENZYMES

CULTURE MEDIA & BACTERIAL STRAINS USED FOR PROTEIN EXPRESSION

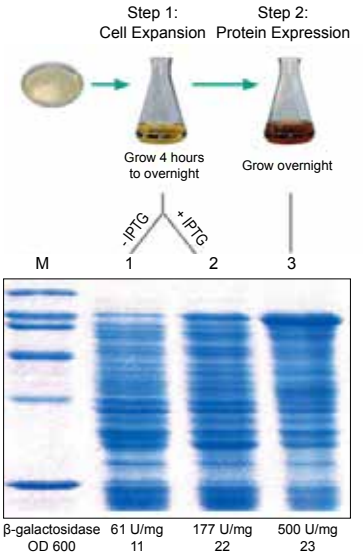
HIS-TAGGED PROTEIN PURIFICATION

ENZYMES

Dual Media Set™

Use

Recombinant Protein Expression...✓



Controlled overexpression of β-galactosidase. Cells were grown in EB, where only background levels of the T7-lac promoter-controlled product are produced (1). Moderate amounts of the enzyme were produced by incubating overnight in EB with IPTG (2), the highest amounts of protein are produced in OB (3).

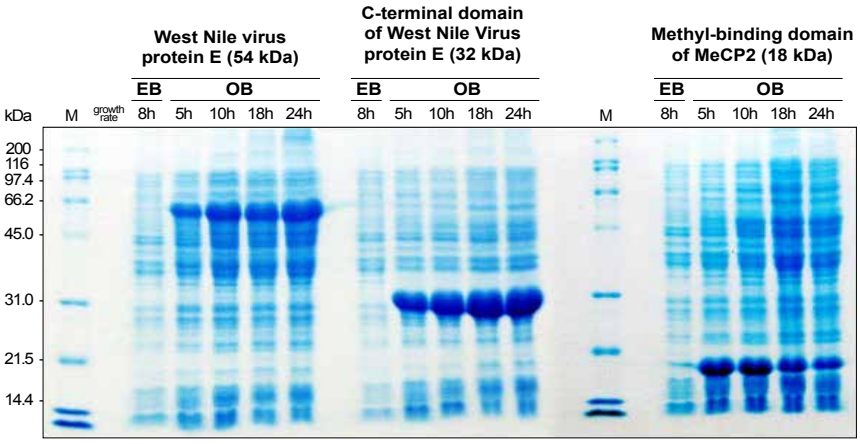
Highlights

- Simple, reliable method for high level recombinant protein expression in *E. coli*.
- Eliminates the need to monitor cell density and the time of inducer addition.
- Synchronizes cultures that express different recombinant proteins.

Description

Although recombinant protein expression in *E. coli* has become routine, high level protein expression or overexpression is not always attainable for every protein. Our research has shown that high level protein expression can be achieved consistently when two processes, cell expansion and protein expression, are kept separate.

The Dual Media Set™, different from commonly used protein expression procedures using Luria-Bertani (LB) medium or other specially prepared medium, contains two specially formulated media: Expansion Broth (EB) and Overexpression Broth (OB). For expansion, *E.coli* cells are grown in EB which keeps the production of recombinant protein repressed. To initiate high level protein expression, OB is simply added to the culture. By using the Dual Media Set™, protein overexpression can be reliably controlled for many recombinant proteins (see figure below). In some circumstances, when the expressed protein is either toxic or insoluble, overexpression may be counter-productive. In such cases, protein production can be kept at a minimum by adding the inducer IPTG (for lac-based promoters) to cells growing in EB (see figure on left).



SDS-PAGE of cell proteins after growth using the Dual Media Set™. M – protein markers; 1-5, West Nile virus protein E (54 kDa): 1, repressed expression in EB, 2-5, over-expression in OB for 5, 10, 18, and 24 hours, respectively, after inoculation with uninduced EB culture; 6-10, C-terminal domain of West Nile virus protein E (32 kDa): 6, repressed expression in EB, 7-10, over-expression in OB for 5, 10, 18, and 24 hours, respectively, after inoculation with uninduced EB culture; 11-15, Methyl-binding domain of MeCP2 (18 kDa): 11, repressed expression in EB, 12-15, over-expression in OB for 5, 10, 18, and 24 hours, respectively, after inoculation with uninduced EB culture.

Product	*Cat. No.*	*Size*
Dual Media Set™ (EB + OB)	M3011	100 ml EB + 500 ml OB
Expansion Broth (EB)	M3012-100 M3012-500	100 ml 500 ml
Overexpression Broth (OB)	M3013-100 M3013-500	100 ml 500 ml

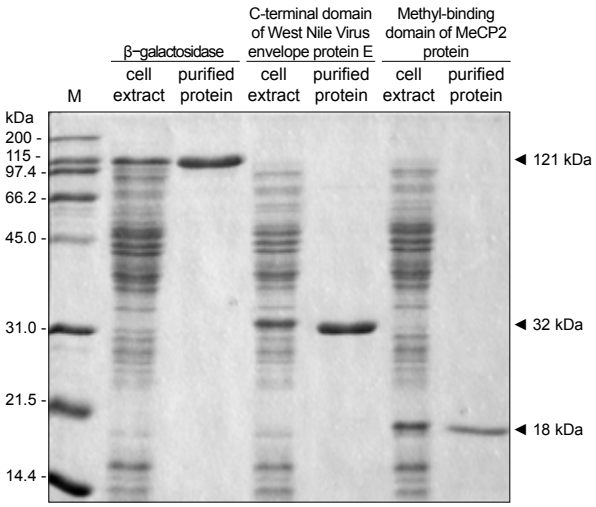
His-Spin Protein Miniprep™

Highlights

- Fast (5 minute) method for the purification of His-tagged proteins from cell free extracts.
- Screen bacterial colonies directly on the basis of protein expression vs. plasmid DNA.
- No special instrumentation is required other than a benchtop microcentrifuge.

Description

The His-Spin Protein Miniprep™ provides researchers with a method for fast His-tagged protein purification. The easy-to-follow procedure is based on a nickel-charged His-Affinity Gel (IMAC), innovative protein purification, and unique *Fast-Spin* column technology. Up to 1 mg of His-tagged protein can be purified in as little as 5 minutes and can be eluted into as little as 100 µl of the provided His-Elution Buffer. The purified protein can be used directly for enzymatic assays, protein biochemical analyses, SDS-PAGE, as well as other protein based applications. The His-Spin Protein Miniprep™ has been optimized to yield maximal protein purity indices: a single protein band is often visualized following Coomassie Blue® staining of proteins in SDS-PAGE gel (see figure below). The straightforward spin-wash-elute protocol dramatically simplifies protein purification and results are obtained in minutes, not hours!



Purification of 6X His-fusion proteins. *E. coli* cell extracts, containing indicated proteins (i.e., 112, 32, 18 kDa) expressed as a N-terminal 6X His-fusion, as well as the proteins purified using His-Spin Protein Miniprep™ were analyzed by SDS-PAGE in a 15% (w/v) polyacrylamide gel, and stained with Coomassie Blue®. The recombinant proteins were purposely expressed to a low level to demonstrate the efficiency of the His-Spin Protein Miniprep™.

Product	*Cat. No.*	*Size*
His-Spin Protein Miniprep™	P2001 P2002	10 preps. 50 preps.
His-Affinity Gel	P2003-2	14 ml

Use

His-tagged Protein Purification..... ✓

Specifications

Format..... Spin Column
His-affinity Gel..... ✓
Protein Binding Capacity.. 1 mg/prep

Enzymes

5-hmC Glucosyltransferase

5-hmC Glucosyltransferase from Zymo Research is a highly active enzyme that specifically tags 5-hydroxymethylcytosine in DNA with a glucose moiety yielding glucosyl-5-hydroxymethylcytosine. Glucosylation of 5-hydroxymethylcytosine by 5-hmC Glucosyltransferase can be used for sequence-specific, locus-specific, as well as global quantification of 5-hydroxymethylcytosine. See p. 39 for details.

Specifications: Provided with 10X 5-hmC GT Reaction Buffer and 10X UDPG.

Enzyme Concentration: 2 U/µl

Optimum Reaction Temperature: 30°C

Standard Reaction Time: 2 hours

Unit Definition: One unit (U) is defined as the amount of enzyme needed to protect 1 µg of 5-hmC DNA Standard [D5405-3] from Csp6I restriction enzyme digestion via glucosylation in a reaction incubated at 30°C for 1 hour.

Cat. No.	*Size*
E2026	100 U
E2027	200 U

Atlantis dsDNase

Atlantis dsDNase is a double-strand DNA specific endonuclease that cleaves phosphodiester bonds in DNA to yield homogeneous populations of core nucleosomes. See p. 35 for details.

Specifications: Typical buffer consists of 20 mM Tris-HCl (pH 7.5) and 5 mM $MgCl_2$.

Enzyme Concentration: 0.1 U/µl

Inactivation: 5X MN Stop Buffer or EDTA.

Optimum Reaction Temperature: 42°C

Unit Definition: One unit (U) is defined as the amount of enzyme needed to produce an increase in absorbance at 260 nm of 0.001 per minute, using 50 mg/ml high MW DNA in 50 mM Na-acetate pH 5.0 and 5 mM $MgCl_2$ (Kunitz, 1950).

Standard Reaction Time: 20 min.

Cat. No.	*Size*
E2030	12.5 U

CpG Methylase (M. SssI)

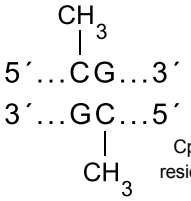
The CpG Methylase from Zymo Research completely methylates all cytosine bases at the C^5 position in double-stranded, non-methylated and hemi-methylated DNA having the dinucleotide sequence 5′…CpG…3′. The reaction conditions are optimized to maximize the processivity of the enzyme to ensure rapid, complete, and reproducible methylation of DNA for accurate DNA methylation analysis. See p. 38 for details.

Specifications: Provided in solution (4 U/µl) with 10X CpG Reaction Buffer and 20X SAM (S-adenosylmethionine).

Source: Recombinant methylase is isolated from *E. coli* expressing the methyltransferase gene from *Spiroplasma* sp. strain MQ1.

Heat Inactivation: 65°C for 20 min.

Unit Definition: One unit (U) is the amount of enzyme required to protect 1 µg of λ DNA from cleavage by BstUI restriction endonuclease in a total reaction volume of 20 µl for 1 hour at 37°C.



CpG Methylase methylates all cytosine residues in double-stranded, CpG context.

Cat. No.	*Size*
E2010	200 U
E2011	400 U

DNase I Set

DNase I (RNase-free) cuts both double-stranded and single-stranded DNA, producing 3′-OH oligonucleotides. It is typically used for selectively degrading DNA in the presence of RNA. This DNase is suited for applications such as nick translation, production of random fragments, cleavage of genomic DNA for footprinting, removal of DNA template after *in vitro* transcription, and removal of DNA from RNA samples prior to applications such as RT-PCR. It is compatible with all of our RNA kits featuring in-column DNase digestion.

Specifications: Lyophilized enzyme provided with DNA Digestion Buffer.

Heat Inactivation: 65°C for 10 min.

Unit Definition: One unit (U) is defined as the amount of enzyme required to degrade 1 µg λ DNA completely in 10 minutes at 37°C in a 50 µl reaction volume (40 mM Tris-HCl, pH 8.0, 10 mM NaCl, 6 mM $MgCl_2$, and 10 mM $CaCl_2$). One unit of enzyme is equivalent to one Kunitz unit under these assay conditions.

Cat. No.	*Size*
E1010	250 U

DNA Degradase™ and DNA Degradase Plus™

DNA Degradase™ and DNA Degradase Plus™ from Zymo Research are nuclease mixes that quickly and efficiently degrade DNA into individual nucleotides or nucleosides, respectively. DNA Degradase™ is ideal for whole-genome DNA methylation analysis by a number of downstream applications (i.e., HPLC, LC/MS, TLC, etc.). Digestion is performed via a simple one-hour, one-step procedure. See p. 42 for details.

Specifications: Provided with 10X DNA Degradase™ Reaction Buffer.

Enzyme Concentration: 10 U/µl

Enzyme Inactivation: 70°C for 20 min.

Optimum Reaction Temperature: 37°C

Unit Definition: One unit (U) is the amount of enzyme required to degrade 1 µg of λ DNA in a total reaction volume of 25 µl for 1 hour at 37°C.

Cat. No.	*Product*	*Size*
E2016	DNA Degradase™	500 U
E2017	DNA Degradase™	2,000 U
E2020	DNA Degradase Plus™	250 U
E2021	DNA Degradase Plus™	1,000 U

dsDNA Shearase™ Plus

dsDNA Shearase™ Plus is an endonuclease that cleaves phosphodiester bonds in DNA to yield oligonucleotides with 5'-phosphate and 3'-hydroxyl termini. It has a particularly strong preference for dsDNA and generates random-ended DNA fragments of the desired size in a single step. This enzyme is compatible with low volume inputs thus minimizing sample loss. See p. 43 for details.

Specifications: Provided with 5X dsDNA Shearase™ Plus Reaction Buffer.

Enzyme Concentration: 1 U/µl

Inactivation: 65°C for 5 min.

Optimum Reaction Temperature: 42°C

Unit Definition: One unit (U) is defined as the amount of enzyme required to convert 250 ng human DNA into fragments in the range of 100-500 bp in 20 minutes at 42°C in a total reaction volume of 10 µl.

Standard Reaction Time: 20 min.

Cat. No.	*Size*
E2018-50	50 U
E2018-200	200 U

GpC Methylase (M. CviPI)

The GpC Methylase from Zymo Research completely methylates all cytosine bases at the C^5 position in double-stranded, non-methylated and hemi-methylated DNA having the dinucleotide sequence 5′…GpC…3′. The reaction conditions are optimized to maximize the processivity of the enzyme to ensure rapid, complete, and reproducible methylation of DNA for accurate DNA methylation analysis. See p. 36 for details.

Specifications: Provided in solution (4 U/µl) with 10X GpC Reaction Buffer and 20X SAM (S-adenosylmethionine).

Source: Recombinant GpC Methylase is isolated from *E. coli* expressing the methyltransferase gene from a Chlorella virus.

Heat Inactivation: 65°C for 20 min.

Unit Definition: One unit (U) is defined as the amount of enzyme required to protect 1 µg of λ DNA against cleavage by HaeIII restriction endonuclease in a total reaction volume of 20 µl for 1 hour at 37°C.

Cat. No.	*Size*
E2014	200 U
E2015	1,000 U

Micrococcal Nuclease

Micrococcal Nuclease cleaves single-stranded and double-stranded DNA and RNA. Complete digestion with Micrococcal Nuclease yields mono- and oligonucleotides with 3′-phosphates. See p. 35 for details.

Specifications: Typical buffer consists of 20 mM Tris-HCl, (pH 8.8), 1 mM $CaCl_2$. $CaCl_2$ is essential for activity.

Enzyme Commission Number: (E.C. 3.1.31.1)

Enzyme Concentration: 0.1 U/µl

Enzyme Inactivation: EDTA or EGTA in molar excess of $CaCl_2$

Optimum Reaction Temperature: 37°C

Unit Definition: One unit (U) will produce 1.0 µmole of acid soluble polynucleotides from native DNA per min at pH 8.8 at 37°C, based on EM/260 = 10,000 for the mixed nucleotides.

Cat. No.	*Size*
D5220-1	10 U / 100 µl

Proteinase K

Proteinase K is a stable serine protease with broad substrate specificity and will degrade many proteins in their native conformation even in the presence of detergents (e.g., SDS). The enzyme is frequently used in molecular biology applications to digest unwanted proteins such as nucleases from DNA and/or RNA preparations from microorganisms, cells, and plants.

Specifications: Lyophilized enzyme provided with Proteinase K Storage Buffer.

Enzyme Commission Number: (EC 3.4.21.64)

Source: Engyodontium album

pH and Temperature Range: 4.0 to 12.0 (8.0 is optimum), 25 to 65°C.

Specific Activity: > 30 units/mg protein

Unit Definition: One unit (U) of enzyme will hydrolyze urea-denatured hemoglobin to produce 1.0 µmole of tyrosine per minute at pH 7.5 at 37°C.

Cat. No.	*Size*
D3001-2-5	5 mg
D3001-2-20	20 mg

Quest*Taq*™ PreMix and Quest*Taq*™ qPCR PreMix

Quest*Taq*™ PreMix is supplied as a convenient 2X concentrated “master mix for robust PCR with little or no by-product formation. It has been optimized for the non-biased amplification of cystosine, 5-methylcytosine (5-mC), 5-hydroxymethylcytosine (5-hmC), and glucosyl-5-hydroxymethylctosine (g5-hmC) containing DNA, ensuring high yield amplification across a wide range of templates. The Quest*Taq*™ PreMix differs from Quest*Taq*™ qPCR PreMix in that it excludes SYTO® 9 dye from the PreMix solution, making it compatible with real-time and quantitative PCR with fluorescent dyes of the researcher’s choosing. Quest*Taq*™ DNA Polymerase has 3′-terminal transferase activity. The addition of “A” overhangs to amplified DNA makes it ideal for use in TA-cloning. See p. 41 for details.

Specifications: Provided as a 2X PreMix (E2050, E2051) or 2X qPCR PreMix (E2052, E2053) containing SYTO® 9 dye.

Source: Recombinant Enzyme

Activity: 5’ – 3’ polymerization

Enzyme Concentration: Reaction conditions at 1X (20 µl total volume) will contain 2 units of Quest*Taq*™ DNA polymerase

Optimum Reaction Temperature: 72°C

Unit Definition: One unit (U) is defined as the amount of enzyme required for the incorporation of 10 nmol dNTPs into an acid-insoluble form in 30 minutes at 72°C.

Cat. No.	*Product*	*Size*
E2050	Quest*Taq*™ PreMix	50 rxns.
E2051	Quest*Taq*™ PreMix	200 rxns.
E2052	Quest*Taq*™ qPCR PreMix	50 rxns.
E2053	Quest*Taq*™ qPCR PreMix	200 rxns.

RNase A

Pancreatic RNase A specifically cleaves at the 3′-side of pyrimidine (uracil or cytosine) phosphate bonds. The enzyme does not hydrolyze DNA, because DNA lacks 2′-OH groups essential for the formation of cyclic intermediates. The enzyme can also be used to hydrolyze RNA from protein samples. It is compatible for use in RNase protection assays, to remove unspecifically bound RNA, in the analysis of RNA sequences, to hydrolyze RNA contained in protein samples, and in the purification of DNA.

Specifications: Lyophilized enzyme.

Enzyme Commission Number: (EC 3.1.27.5)

Source: Bovine Pancreas

Enzymatic Activity: 50 - 100 Kunitz units per mg protein.

Cat. No.	*Size*
E1008-2	2 mg
E1008-8	8 mg
E1008-24	24 mg

Zymolyase

Digestion of yeast and fungal cell walls is necessary for many experimental procedures including spheroplasting, immunofluorescence, transformation, protein purification, and others. The use of lytic enzymes like Zymolyase are routinely used for digestion. The Zymolyase from Zymo Research is prepared from *Arthrobacter luteus* and is 100T equivalent. The storage buffer provided with the lyophilized enzyme has been optimized to confer maximal levels of enzymatic activity. R-Zymolyase also contains RNase A.

Specifications: Lyophilized enzyme provided with Zymolyase Storage buffer.

Source: *Arthrobactor luteus*

Activity: β-1,3-glucanase

Essential Enzyme: β-1,3-glucan laminaripentaohydrolase

Optimum pH and Temperature: pH 7.5, 35°C (lysis of viable yeast), pH 6.5, 45°C (hydrolysis of yeast glucan)

Unit Definition: One unit (U) of lytic activity is defined as the amount of enzyme that catalyzes a 10% decrease in optical density at 800 nm (OD_{800}) in 30 minutes.

Assay Condition: Yeast (0.8 - 1.0 OD_{800}) in 50 mM potassium phosphate, pH 7.5, 10 mM 2-mercaptoethanol.

Cat. No.	*Product*	*Size*
E1004	Zymolyase	1,000 U
E1005	Zymolyase	2,000 U
E1006	R-Zymolyase	1,000 U

Zymo*Taq*™ DNA Polymerase

Zymo*Taq*™ DNA Polymerase contains all the reagents needed to perform “hot-start” PCR. The inclusion of a heat-activated, thermostable DNA polymerase reduces primer dimer and nonspecific product formation that can occur during PCR. This unique product is specifically designed for the amplification of bisulfite-treated DNA for methylation detection, but is applicable for conventional PCR. The product generates specific amplicons with little or no by-product formation. Simple and easy to use: Heat at 95°C for 10 minutes to initiate polymerization. Zymo*Taq*™ DNA Polymerase is a heat-activated, “hot start” polymerase that has 3′-terminal transferase activity. The addition of “A” overhangs to amplified DNA makes it ideal for use in TA-cloning. See p. 40 for details.

Specifications: Provided as a PreMix (E2003, E2004) or as a component of a set (E2001, E2002).

Source: Recombinant enzyme

Activity: 5′ - 3′ DNA polymerization

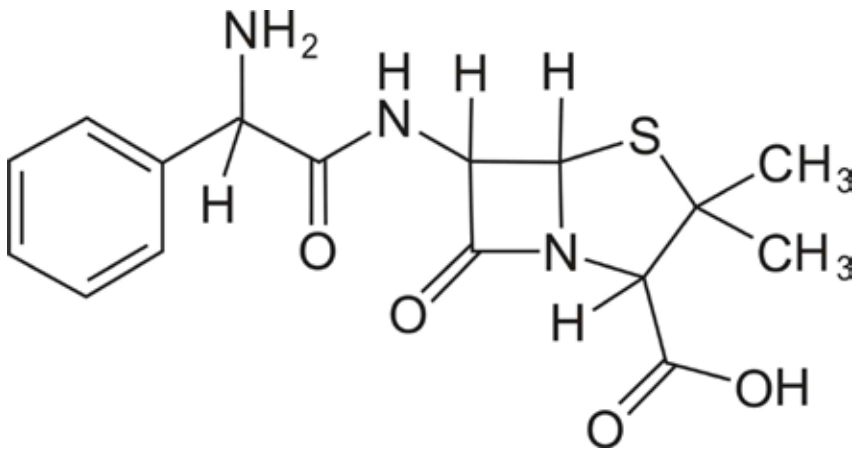
Optimum Reaction Temperature: 72°C

Unit Definition: One unit (U) is defined as the amount of enzyme required for the incorporation of 10 nM dNTPs into an acid-insoluble form in 30 minutes at 72°C.

Cat. No.	*Product*	*Size*
E2001	Zymo*Taq*™ DNA Polymerase	50 rxns.
E2002	Zymo*Taq*™ DNA Polymerase	200 rxns.
E2003	Zymo*Taq*™ PreMix	50 rxns.
E2004	Zymo*Taq*™ PreMix	200 rxns.

7 Antibiotics & Chemicals

Zymo Research offers a range of premade, ready to use high quality antibiotics and chemicals to satisfy your research needs. Our ready-to-use ampicillin (shown below), chloramphenicol, kanamycin, and tetracycline solutions are perfect for use in bacterial selection procedures.



ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®

ANTIBIOTICS & CHEMICALS

ANTIBIOTICS

CHEMICALS

Antibiotic	Description	Resistance	Working Concentration (For *E. coli*)
Ampicillin (Ap)	For Gram (+) and (-) bacteria. Penicillin derivative that prevents bacterial cell wall synthesis.	Resistance to ampicillin is conferred by the *bla* gene which encodes β-lactamase that cleaves the β-lactam bond of the antibiotic.	20 - 100 µg/ml
Chloramphenicol (Cm)	For Gram (+) and (-) bacteria and some mycobacteria. Chlorampenicol inhibits bacterial protein synthesis by binding the 50S ribosomal subunit.	Resistance to chloramphenicol is conferred by the *cat* gene which encodes an acetyltransferase that acetylates and inactivates the antibiotic.	20 µg/ml
Kanamycin (Km)	For Gram (+) and (-) bacteria. Kanamycin binds to 70S ribosomes resulting in dysfunctional translation of mRNA.	Resistance to kanamycin is conferred by an aminoglycoside phosphotransferase that modifies the antibiotic, preventing its interaction with ribosomes.	30 µg/ml
Tetracycline (Tc)	For Gram (+) and (-) bacteria. Tetracycline inhibits bacterial protein synthesis by binding the 30S ribosomal subunit.	Resistance to tetracycline is conferred by the *tet* gene product that alters the bacterial cell membrane and transport of the antibiotic into the cell.	10 - 20 µg/ml

Antibiotics

Ampicillin Sodium

Description Premade ampicillin solution. Ampicillin inhibits bacterial cell wall synthesis. Commonly used to select for ampicillin resistant plasmid bearing strains of bacteria. Effective against both Gram (-) and Gram (+) bacteria.

Purity	≥ 98%
Concentration	100 mg/ml

Cat. No.	*Size*
A1001-5	5 ml

Chloramphenicol

Description Premade chloramphenicol solution. Chloramphenicol inhibits bacterial protein synthesis by binding 50S ribosomal subunit. Commonly used for the amplification of vectors in Gram (-) bacteria. Effective against both Gram (-) and Gram (+) bacteria and some mycobacteria.

Purity	≥ 97%
Concentration	10 mg/ml
Storage	-20° C

Cat. No.	*Size*
A1002-5	5 ml
A1002-25	5 x 5 ml

Kanamycin Sulfate

Description Premade kanamycin solution. Kanamycin inhibits bacterial protein synthesis by binding 70S ribosomes resulting in dysfunctional translation of mRNA commonly used to select for cosmid vectors. Effective against both Gram (-) and Gram (+) bacteria.

Purity	≥ 98%
Concentration	35 mg/ml
Storage	-20° C

Cat. No.	*Size*
A1003-5	5 ml
A1003-25	5 x 5 ml

Tetracycline Hydrochloride - Reagent Grade

Description Premade tetracycline solution. Tetracycline inhibits bacterial protein synthesis by binding the 30S ribosomal subunit. Effective against both Gram (-) and Gram (+) bacteria.

Purity	≥ 98%
Concentration	10 mg/ml
Storage	-20° C

Cat. No.	*Size*
A1004-5	5 ml
A1004-25	5 x 5 ml

Chemicals

5-FOA (5-Fluoroorotic Acid)

Description Synthetic 5-FOA monohydrate powder or 100X (100 mg/ml) solution in DMSO. See p. 157 for details.

Formula $C_5H_3FN_2O_4 \cdot H_2O$
M.W. 174.0 g/mol
Purity ≥ 98%

Cat. No.	*Size*
F9001-1	5-FOA 1 g (Powder)
F9001-5	5-FOA 5 g (Powder)
F9003	100X 5-FOA 10 ml (Liquid)

Arabinose

Description Concentrated arabinose inducer for XJ Autolysis™ strains.

Concentration 500X. 1.5 M L-arabinose, 0.5 M $MgCl_2$.
Storage -20° C

Cat. No.	*Size*
A2001-1	1 ml
A2001-10	10 x 1 ml

His-Affinity Gel

Description Nickel affinity gel used for the purification of histidine-tagged proteins. 6% beaded agarose. ≥ 15 mg/ml protein binding capacity. See His-Spin Protein Miniprep™, p. 163.

Concentration 50% suspension in 30% ethanol.
Storage 4° C

Cat. No.	*Size*
P2003-2	14 ml

IPTG (Isopropyl-β-D-thiogalactopyranoside)

Description Premade IPTG in water.

Purity ≥ 98%.
Concentration 0.5 M
Storage -20° C

Cat. No.	*Size*
I1001-5	5 ml
I1001-25	5 x 5 ml

X-Gal (5-bromo-4-chloro-3-indolyl β-D-galactopyranoside)

Description Sterile, ready to use X-Gal solution.

Concentration 2% w/v in DMF
Storage -20° C

Cat. No.	*Size*
X1001-5	5 ml
X1001-25	5 x 5 ml

8 Columns, Plates, Instruments & Accessories

The nucleic acid binding columns are vital components of the kits presented in preceding chapters. Most of these columns, plates, filters, tubes, and other accessories can be purchased separately and are highlighted in this chapter.

Column design is crucial to the quality of eluted nucleic acid, and Zymo Research's Zymo-Spin™ series of columns and plates are uniquely designed to make high yield recovery of DNA and RNA simple, fast, and reliable. The columns and plates contain silica-based matrices of exclusive chemical composition that are optimized for maximal adsorption of DNA and/or RNA and efficiently remove contaminants during the purification process. Our Zymo-Spin™ technology ensures rapid and complete filtration of solutions through the column matrix, eliminating the likelihood of buffer carryover.

For instance, our innovative Zymo-Spin™ I column has zero retention volume and an elution volume as low as 6 µl, something no other supplier can claim. Likewise, the Zymo-Spin™ I-96 filtration plate integrates our existing Zymo-Spin™ I column technology into a durable 96-well format that can be used for simple, rapid cleaning and concentration of DNA/RNA in centrifugation based protocols. Other Zymo-Spin™ columns are designed for processing larger samples and binding greater amounts of nucleic acid, but the principle is the same: high-quality, high-yield DNA or RNA.

Products featuring BashingBead™ lysis technology were spotlighted in the chapters on environmental DNA (p. 100-105) and RNA (p. 137-138) purification. ZR BashingBead™ Lysis Tubes and ZR-96 BashingBead™ Lysis Racks may be purchased separately. Additionally, we carry cell disrupters and accessories from several manufacturers. Each of these machines can be used for easy and efficient cell lysis with the ZR BashingBead™ products. For manual homogenization of tissues, Zymo Research offers Squisher™ homogenization devices in single, 8-well, and 96-well formats. These homogenizers can be cleaned and reused for the simple, efficient processing of tissue samples, such as liver, brain, mouse tail snips, *Drosophila*, other insects, etc.

ZYMO RESEARCH
The Beauty of Science is to Make Things Simple®

COLUMNS, PLATES, INSTRUMENTS & ACCESSORIES

Technology Overview: Zymo-Spin™ Columns

Zymo-Spin™ I Columns

Name	Zymo-Spin™ I	Zymo-Spin™ IC	Zymo-Spin™ IC-XL	Zymo-Spin™ IC-S
Format	DNA/RNA binding	DNA/RNA binding	DNA/RNA binding	DNA binding
Binding Capacity / Elution	5 µg / ≥ 6 µl	5 µg / ≥ 6 µl	10 µg / ≥ 10 µl	5 µg / ≥ 10 µl
Compatibility	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C1003-50 — 50 pack C1003-250 — 250 pack	C1004-50 — 50 pack C1004-250 — 250 pack	C1002-25 — 25 pack C1002-100 — 100 pack	C1015-25 — 25 pack C1015-100 — 100 pack

Zymo-Spin™ II Columns

Name	Zymo-Spin™ II	Zymo-Spin™ IIC	Zymo-Spin™ IIN	Zymo-Spin™ IIC-XL
Format	DNA/RNA binding	DNA/RNA binding	DNA/RNA binding	DNA/RNA binding
Binding Capacity / Elution	25 µg / ≥ 25 µl	25 µg / ≥ 25 µl	25 µg / ≥ 25 µl	25 µg / ≥ 35 µl
Compatibility	microcentrifuge	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C1008-50 — 50 pack C1008-250 — 250 pack	C1011-50 — 50 pack C1011-250 — 250 pack	C1019-50 — 50 pack C1019-250 — 250 pack	C1102-25 — 25 pack C1102-50 — 50 pack

Zymo-Spin™ III Columns

Name	Zymo-Spin™ III	Zymo-Spin™ IIIC	Zymo-Spin™ IIICG
Format	DNA/RNA binding	DNA/RNA binding	DNA/RNA binding
Binding Capacity / Elution	25 µg / ≥ 35 µl	25 µg / ≥ 35 µl	25 µg / ≥ 35 µl
Compatibility	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C1005-50 — 50 pack C1005-250 — 250 pack	C1006-50 — 50 pack C1006-250 — 250 pack	C1006-50-G — 50 pack C1006-250-G — 250 pack

Zymo-Spin™ IV Columns


Orange Cap


Green Cap


Yellow Cap

Name	Zymo-Spin™ IV	Zymo-Spin™ IV-HRC	Zymo-Spin™ IV-µHRC
Format	filtration column	DNA/RNA inhibitor removal filtration column	DNA/RNA inhibitor removal filtration column
Volumetric Capacity	700 µl	50 - 200 µl	10 - 50 µl
Compatibility	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds	microcentrifuge, vacuum manifolds
Matrix / Construction	silica-based with 10-20 µm pore size / polypropylene, snap off base, sealable screw cap	silica-based with 10-20 µm pore size, PCR/RT inhibitor removal resin / polypropylene, snap off base, sealable screw cap	silica-based with 10-20 µm pore size, PCR/RT inhibitor removal resin / polypropylene, snap off base, sealable screw cap
Cat. No. / Size	C1007-50 — 50 pack C1007-250 — 250 pack	C1010-50 — 50 pack	C1022-50 — 50 pack

Zymo-Spin™ V Columns

Name	Zymo-Spin™ V	Zymo-Spin™ V-E
Format	DNA/RNA binding	DNA/RNA binding
Binding Capacity / Elution	100 µg / ≥ 100 µl	125 µg / ≥ 100 µl
Compatibility	microcentrifuge, centrifuge, vacuum manifolds, syringe (luer-lok top)	microcentrifuge, centrifuge, vacuum manifolds, syringe (luer-lok top)
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C1012-25 — 25 pack C1012-50 — 50 pack	C1024-25 — 25 pack C1024-50 — 50 pack

Zymo-Spin™ VI Columns

Name	Zymo-Spin™ VI	Zymo-Spin™ VI-P
Format	DNA/RNA binding	Plasmid DNA binding
Binding Capacity / Elution	500 µg / ≥ 1 ml	10 mg / ≥ 2 ml
Compatibility	centrifuge, vacuum manifolds, luer-lok bottom assembly	centrifuge, vacuum manifolds, luer-lok bottom assembly
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C1013-10 — 10 pack C1013-20 — 20 pack	C1044-5 — 5 pack

Technology Overview: Zymo-Spin™ Plates

Silicon-A™ Plates

Name	Silicon-A™ Plate	Silicon-A™-HRC Plate
Format	DNA/RNA binding - up to 5 µg per well	DNA/RNA inhibitor removal, filtration plate
Capacity / Elution	600 µl per well / ≥ 30 µl	up to 100 µl/well
Dimensions (HxWxL)	19 mm x 83 mm x 125 mm	19 mm x 83 mm x 125 mm
Compatibility	centrifuge	centrifuge
Matrix / Construction	silica-based / polypropylene	silica-based, PCR/RT inhibitor removal resin / polypropylene
Cat. No. / Size	C2001 – 2 plates	C2009 – 2 plates

Zymo-Spin™ I Plates

Name	Zymo-Spin™ I-96 Plate	Zymo-Spin™ I-96 Shallow Well Plate
Format	DNA/RNA binding - up to 5 µg per well	DNA/RNA binding - up to 5 µg per well
Capacity / Elution	1.1 ml per well / ≥ 10 µl	600 µl per well / ≥ 10 µl
Dimensions (HxWxL)	35 mm x 83 mm x 125 mm	19 mm x 83 mm x 125 mm
Compatibility	centrifuge	centrifuge
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C2004 – 2 plates	C2004-SW – 2 plates

Zymo-Spin™ I Plates

Zymo-Spin™ I-96-XL Plate

Name	Zymo-Spin™ IB-96 Plate	Zymo-Spin™ I-96-XL Plate
Format	DNA/RNA binding - up to 5 µg per well	DNA/RNA binding - up to 25 µg per well
Capacity / Elution	600 µl per well / ≥ 10 µl	1.1 ml per well / ≥ 50 µl
Dimensions (HxWxL)	19 mm x 83 mm x 125 mm	35 mm x 83 mm x 125 mm
Compatibility	centrifuge	centrifuge
Matrix / Construction	silica-based / polypropylene	silica-based / polypropylene
Cat. No. / Size	C2006 – 2 plates	C2010 – 2 plates

Zymo-Spin™ I

The Zymo-Spin™ I column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ I features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 5 µg DNA or RNA in ≥ 6 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1003-50	50 pack
C1003-250	250 pack

Zymo-Spin™ IC

Capped version of the Zymo-Spin™ I column. The Zymo-Spin™ IC column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IC features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 5 µg DNA or RNA in ≥ 6 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1004-50	50 pack
C1004-250	250 pack

Zymo-Spin™ IC-XL

The Zymo-Spin™ IC-XL column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IC-XL features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 10 µg DNA or RNA in ≥ 10 µl eluate. Capacity is 1 ml.

Cat. No.	*Qty.*
C1002-25	25 pack
C1002-50	50 pack

Zymo-Spin™ IC-S

The Zymo-Spin™ IC-S column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA and fluorescent dye removal. The Zymo-Spin™ IC-S features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 5 µg DNA or RNA in ≥ 10 µl eluate. Capacity is 900 µl.

Cat. No.	*Qty.*
C1015-25	25 pack

Zymo-Spin™ IB

The black, opaque Zymo-Spin™ IB column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA and fluorescent dye removal. The Zymo-Spin™ IB features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 5 µg DNA or RNA in ≥ 6 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1014-50	50 pack
C1014-250	250 pack

Zymo-Spin™ PI

The Zymo-Spin™ PI column features durable polypropylene construction and is the same column featured in the His-Spin Protein Miniprep™ (p. 147). Capacity is 800 µl. Note: Column only, does not contain His-Affinity gel.

Cat. No.	*Qty.*
P2003-1	50 pack

Zymo-Spin™ II

The Zymo-Spin™ II column features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 25 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1008-50	50 pack
C1008-250	250 pack

Zymo-Spin™ IIC

The Zymo-Spin™ IIC column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IIC features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 25 µl eluate. Capacity is 900 µl.

Cat. No.	*Qty.*
C1011-50	50 pack
C1011-250	250 pack

Zymo-Spin™ IIC-XL

The Zymo-Spin™ IIC-XL column can be used either in microcentrifuges or on vacuum manifolds for the purification of high molecular weight DNA and/or RNA. The Zymo-Spin™ IIC-XL features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 35 µl eluate. Capacity is 900 µl.

Cat. No.	*Qty.*
C1102-25	25 pack
C1102-50	50 pack

Zymo-Spin™ IIN

The Zymo-Spin™ IIN column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IIN features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 25 µl eluate. Capacity is 900 µl.

Cat. No.	*Qty.*
C1019-50	50 pack
C1019-250	250 pack

Zymo-Spin™ III

The Zymo-Spin™ III column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ III features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 35 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1005-50	50 pack
C1005-250	250 pack

Zymo-Spin™ IIIC

Capped version of the Zymo-Spin™ III column. The Zymo-Spin™ IIIC column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IIIC features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 35 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1006-50	50 pack
C1006-250	250 pack

Zymo-Spin™ IIICG

Capped version of the Zymo-Spin™ III column with a green retention ring. The Zymo-Spin™ IIICG column can be used either in microcentrifuges or on vacuum manifolds for the purification of DNA and/or RNA. The Zymo-Spin™ IIICG features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 25 µg DNA or RNA in ≥ 35 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1006-50-G	50 pack
C1006-250-G	250 pack

Zymo-Spin™ IV

The Zymo-Spin IV™ is a durable polypropylene filtration column that features a unique snap-off base and sealable orange screw cap. It is ideal for clarifying solutions including crude cell lysates and homogenates. The silica filtration membrane has an approximate 10 - 20 µm pore size. Capacity is 700 µl.

Cat. No.	*Qty.*
C1007-50	50 pack
C1007-250	250 pack

Zymo-Spin™ IV-HRC

The Zymo-Spin™ IV-HRC is a durable polypropylene filtration column filled with a unique matrix that features a unique snap off base and sealable green screw cap. It is ideal for removing PCR/RT inhibitors including polyphenols, humic acids and fulvic acids from DNA/RNA preparations derived from water or soil microbes. The column filtration membrane has an approximate 10 - 20 µm pore size. Capacity is 50 - 200 µl.

Cat. No.	*Qty.*
C1010-50	50 pack

Zymo-Spin™ IV-µHRC

The Zymo-Spin™ IV-µHRC is a durable polypropylene filtration column filled with a unique matrix that features a unique snap off base and sealable yellow screw cap. It is ideal for removing PCR/RT inhibitors including polyphenols, humic acids, and fulvic acids from DNA/RNA preparations derived from water or soil microbes. The column filtration membrane has an approximate 10 - 20 µm pore size. Capacity is 10 - 50 µl.

Cat. No.	*Qty.*
C1022-50	50 pack

Zymo-Spin™ V

The versatile Zymo-Spin™ V column can be used either in microcentrifuges, centrifuges, or on vacuum manifolds for the purification of DNA and/or RNA. This column features a luer-lok top allowing it to be easily attached to a syringe. The Zymo-Spin™ V features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 100 µg DNA or RNA in ≥ 100 µl eluate. Capacity is 800 µl.

Cat. No.	*Qty.*
C1012-25	25 pack
C1012-50	50 pack

Zymo-Spin™ V-E

The versatile Zymo-Spin™ V-E column can be used either in microcentrifuges, centrifuges, or on vacuum manifolds for the purification of DNA and/or RNA. This column features a luer-lok top allowing it to be easily attached to a syringe, reservoir, or prefilter. The Zymo-Spin™ V-E features durable polypropylene construction and contains a unique silica-based matrix for the purification of up to 125 µg DNA or RNA in ≥ 100 µl elution buffer or water. The capacity of the spin column is 400 µl.

Cat. No.	*Qty.*
C1024-25	25 pack
C1024-50	50 pack

Zymo Spin™ VI

The versatile Zymo-Spin™ VI column can be used either in centrifuges or on vacuum manifolds for the purification of DNA and/or RNA. Exclusive to this column is a luer-lok bottom assembly. The Zymo-Spin™ VI features durable polypropylene construction and contains a unique silica-based matrix that allows purification of up to 500 µg DNA or RNA in ≥ 1 ml eluate. Capacity is 15 ml.

Cat. No.	*Qty.*
C1013-10	10 pack
C1013-20	20 pack

Zymo Spin™ VI-P

Available as a refill for the ZymoPURE™ Gigaprep Kit. The Zymo-Spin™ VI-P can be used in centrifuges or on vacuum manifolds for the purification of plasmid DNA. Exclusive to this column is a Luer-Lock bottom assembly and conical tip. The Zymo-Spin™ VI-P features durable polypropylene construction and a unique silica-based matrix that allows for purification of up to 10 mg of plasmid DNA in ≥ 2 ml eluate when used in combination with ZymoPURE™ Plasmid Prep buffers. Capacity is 15 ml and can be increased to 615 ml when used in conjunction with the 600 ml reservoir (Cat No. C1033-5).

Cat. No.	*Qty.*
C1044-5	5 pack

Collection/Filter Assemblies

Zymo-Spin™ III-P with 15 ml and 50 ml Reservoir

Available as a refill for the ZymoPURE™ Midiprep Kit. The versatile Zymo-Spin™ III-P with 15 ml conical and 50 ml reservoirs can be used in centrifuges or on vacuum manifolds for the purification of plasmid DNA. The Zymo-Spin™ III-P features durable polypropylene construction and a unique silica-based matrix that allows for purification of up to 300 µg of plasmid DNA in ≥ 100 µl eluate when used in combination with ZymoPURE™ Plasmid Prep buffers. Capacity with reservoir assembly is 65 ml.

Cat. No.	*Qty.*
C1040-5	5 pack

Zymo-Spin™ V with Reservoir

The Zymo-Spin™ V with Reservoir assembly can be used in conjunction with centrifuges and on vacuum manifolds for the purification of DNA and/or RNA. The spin column and reservoir feature durable polypropylene construction. The spin column features a unique silica-based matrix for the purification of up to 100 µg DNA or RNA in ≥ 100 µl elution buffer or water. Capacity of the spin column with reservoir is 15 ml.

Cat. No.	*Qty.*
C1016-25	25 pack
C1016-50	50 pack

Zymo-Spin™ V-P with 15 ml and 50 ml Reservoir

Available as a refill for the ZymoPURE™ Maxiprep Kit. The versatile Zymo-Spin™ V-P with 15 ml conical and 50 ml reservoirs can be used in centrifuges or on vacuum manifolds for the purification of plasmid DNA. The Zymo-Spin™ V-P features durable polypropylene construction and a unique silica-based matrix that allows for purification of up to 1.2 mg of plasmid DNA in ≥ 200 µl eluate when used in combination with ZymoPURE™ Plasmid Prep buffers. Capacity with reservoir assembly is 65 ml.

Cat. No.	*Qty.*
C1042-5	5 pack

Zymo-Spin™ V-E with Zymo Midi Filter™

The Zymo-Spin™ V-E with Zymo Midi Filter™ assembly can be used in conjunction with centrifuges and on vacuum manifolds for the purification of DNA and/or RNA. The spin column and filter feature durable polypropylene construction. The spin column features a unique silica-based matrix for the purification of up to 125 µg DNA or RNA in ≥ 100 µl elution buffer or water. The capacity of the spin column with filter is 15 ml.

Cat. No.	*Qty.*
C1021-25	25 pack

Zymo-Spin™ VI with Reservoir

The Zymo-Spin™ VI with Reservoir assembly can be used with vacuum manifolds for the purification of DNA and/or RNA. The spin column and reservoir feature durable polypropylene construction. The spin column features a unique silica-based matrix for the purification of up to 500 µg DNA or RNA in ≥ 1 ml elution buffer or water. The capacity of the spin column with filter is 75 ml.

Cat. No.	*Qty.*
C1018-10	10 pack
C1018-20	20 pack

Zymo-Spin™ VI with Zymo Maxi Filter™

The Zymo-Spin™ VI with Zymo Maxi Filter™ assembly can be used with vacuum manifolds for the purification of DNA and/or RNA. The spin column and filter feature durable polypropylene construction. The spin column features a unique silica-based matrix for the purification of up to 500 µg DNA or RNA in ≥ 1 ml elution buffer or water. The capacity of the spin column with filter is 75 ml.

Cat. No.	*Qty.*
C1017-10	10 pack
C1017-20	20 pack

ZymoPURE™ Syringe Filter and Plunger Set

The ZymoPURE™ Syringe Filter features durable polypropylene construction and novel filtration media that allows for rapid clarification of up to 60 ml of neutralized bacterial lysate using the supplied polypropylene plunger. Each ZymoPURE™ Syringe Filter also includes a pre-attached ABS Luer-Lock plug in order to keep the tip clean and free from leaking during processing. Syringe filters and plungers are non-sterile and coated with silicone lubricant for easier handling.

Cat. No.	*Qty.*
C1036-5	5 pack

ZymoPURE™ Giga Filter

The ZymoPURE™ Giga Filter features durable polypropylene construction and novel filtration media that allows for rapid clarification of up to 500 ml of neutralized bacterial lysate using a vacuum source. The ZymoPURE™ Giga Filter also has a uniquely designed fitting that permits use with either 33 mm or 45 mm-neck glass bottles. Filter units are non-sterile and include a polypropylene cap for the reservoir.

Cat. No.	*Qty.*
C1038-1	1 pack

ZRC-GF Filter™

The ZRC-GF Filter™ syringe filter features durable polypropylene construction and contains a 1.6 µm pore size glass fiber filtration membrane. The filter is ideal for separating the cellular component from biological liquids (e.g., urine) and is the same filter featured in the ZR Urine DNA and RNA Isolation kits.

Cat. No.	*Qty.*
C1009-20	20 pack
C1009-50	50 pack

Reservoirs

15 ml Reservoir

The 15 ml Reservoir, used in conjunction with a luer-lock column, can be used with vacuum manifolds for the purification of DNA and/or RNA. The reservoir features durable polypropylene construction. The volume capacity of the reservoir is 15 ml.

Cat. No.	*Qty.*
C1030-25	25 pack

15 ml Conical Reservoir

The 15 ml Conical Reservoir, used in conjunction with a luer-lock column, can be used with vacuum manifolds for the purification of DNA and/or RNA. The conical shape is designed to ensure no liquid is left behind during processing. The reservoir features durable polypropylene construction. The volume capacity of the reservoir is 15 ml.

Cat. No.	*Qty.*
C1031-25	25 pack

50 ml Reservoir

The 50 ml Reservoir, used in conjunction with a luer-lock column, can be used with vacuum manifolds for the purification of DNA and/or RNA. The reservoir is designed to ensure no liquid is left behind during processing. The reservoir features durable polypropylene construction. The volume capacity of the reservoir is 50 ml.

Cat. No.	*Qty.*
C1032-25	25 pack

600 ml Reservoir

The 600 ml Reservoir, used in conjunction with a luer-lock column, can be used with vacuum manifolds for the purification of DNA and/or RNA. The large volume capacity is perfect for large-scale purification such as plasmid Gigapreps (e.g. ZymoPURE™ Gigaprep). The reservoir is designed to ensure no liquid is left behind during processing. The reservoir features durable polypropylene construction. The volume capacity of the reservoir is 600 ml.

Cat. No.	*Qty.*
C1033-5	5 pack

Tubes

Collection Tube (2.0 ml)

Durable polypropylene collection tube that is used in conjunction with the Zymo-Spin™ line of spin columns (i.e., Zymo-Spin™ I through Zymo-Spin™ V). Capacity is 2 ml.

Cat. No.	*Qty.*
C1001-50	50 tubes
C1001-500	500 tubes
C1001-1000	1,000 tubes

DNase/RNase-free Tubes (1.5 ml)

DNase/RNase-free 1.5 ml microcentrifuge tubes made of durable polypropylene construction.

Cat. No.	*Qty.*
C2001-50	50 tubes
C2001-100	100 tubes

Clear Tubes (2.0 ml)

Clear 2.0 ml skirted tubes made of durable polypropylene construction. Available as V-bottom or U-bottom tubes provided with caps.

	Cat. No.	*Qty.*
V-bottom	C1025-50	50 pack
	C1025-500	500 pack
U-bottom	C1027-50	50 pack
	C1027-50	500 pack

Amber Tubes (2.0 ml)

Clear 2.0 ml skirted tubes made of durable polypropylene construction. Available as V-bottom or U-bottom tubes provided with caps.

	Cat. No.	Qty.
V-bottom	C1026-50	50 pack
	C1026-500	500 pack
U-bottom	C1028-50	50 pack
	C1028-50	500 pack

ZR BashingBead™ Lysis Tubes (0.5 mm)

Each impact resistant 2.0 ml tube contains 0.7 ml (dry volume) of 0.5 mm ZR BashingBead™ lysis matrix. These state of the art, ultra-high density beads are fracture resistant, chemically inert, and ideal for disrupting tough-to-lyse bacteria, yeast, fungi, and algae.

Cat. No.	Qty.
S6002-50	50 tubes

ZR BashingBead™ Lysis Tubes (2.0 mm)

Each impact resistant 2 ml tube contains 0.7 ml dry volume 2.0 mm ZR BashingBead™ lysis matrix. The state of the art, ultra-high density beads are fracture resistant, chemically inert, and ideal for disrupting tough-to-lyse biological samples. These beads are ideal for tissues, insects, plant material, etc.

Cat. No.	Qty.
S6003-50	50 tubes

DNA Affinity Beads

ZymoBeads™

DNA affinity matrix, made of silica beads, featured in ZymoBead™ Genomic DNA Kit (p. 113) and ZR Serum DNA Kit™ (p. 113).

Cat. No.	Qty.
D3004-3-1	1 ml
D3004-3-4	4 x 1 ml

MagBinding Beads

Paramagnetic DNA affinity matrix. Featured in Zyppy™-96 Plasmid MagBead MiniPrep (p. 82) and EZ DNA Methylation™ MagPreps (p. 13-16).

Cat. No.	Qty.
D4100-2-6	6 ml
D4100-2-8	8 ml
D4100-2-12	12 ml
D4100-2-16	16 ml
D4100-2-24	24 ml

96-Well Plates, Blocks & Racks

Silicon-A™ Plate

The Silicon-A™ Plate can be used in centrifuges for the large scale (i.e., 96-well) purification of DNA and/or RNA. Its low-profile, durable polypropylene construction and unique silica-based matrix make it perfect for purifying up to 5 µg DNA or RNA in ≥ 30 µl eluate per well. Capacity is 600 µl per well.

Cat. No.	*Qty.*
C2001	2 plates

Silicon-A™-HRC Plate

The Silicon-A™-HRC Plate can be used in centrifuges for large-scale (i.e., 96-well) purification of DNA and/or RNA. Its low-profile, durable polypropylene construction and unique matrix make it ideal for removing polyphenolic compounds (e.g. melanin, humic acids, tannins, etc.) that can inhibit PCR and RT in non-pure DNA and RNA preparations, respectively. Capacity is 100 µl per well.

Cat. No.	*Qty.*
C2009	2 plates

Zymo-Spin™ I-96 Plate

The Zymo-Spin I-96™ Plate can be used in centrifuges for the large-scale (i.e., 96-well) purification of DNA and/or RNA. Its durable polypropylene construction and unique silica-based matrix make it perfect for purifying up to 5 µg DNA or RNA in ≥ 10 µl eluate per well. Capacity is 1.1 ml (C2004) or 600 µl (C2004-SW) per well.

Cat. No.	*Qty.*
C2004	2 plates
C2004-SW	2 plates

Zymo-Spin™ IB-96 Plate

The Zymo-Spin™ IB-96 Plate can be used in centrifuges for large-scale (i.e., 96-well) purification of DNA and/or RNA. Its low-profile, durable polypropylene construction and unique silica-based matrix make it perfect for purifying up to 5 µg DNA or RNA in ≥ 15 µl/well elution buffer or water. Opaque black in color. Capacity is 600 µl per well.

Cat. No.	*Qty.*
C2006	2 plates

Zymo-Spin™ I-96-XL Plate

The Zymo-Spin™ I-96-XL Plate can be used in centrifuges for the large-scale (i.e., 96-well) purification of high molecular weight DNA and/or RNA. Its deep-well, durable polypropylene construction and unique silica-based matrix make it perfect for purifying up to 25 µg DNA or RNA in ≥15 µl eluate per well. Capacity is 1.1 ml per well.

Cat. No.	*Qty.*
C2010	2 plates

Collection Plate

The 96-well Collection Plates feature deep-well, durable, clear polypropylene construction. Each has a level footprint and conforms to laboratory standards. Adaptable for use with either Silicon-A™, Zymo-Spin™ I-96, Zymo-Spin™ IB-96, and Zymo-Spin™ III-96 plates. Capacity is 2 ml per round bottom well.

Cat. No.	*Qty.*
C2002	2 plates

Elution Plate

These clear polypropylene plates have a level footprint and conform to laboratory standards. Adaptable for use with either Silicon-A™ plates or Zymo-Spin™ I-96 filtration plates. Capacity is 350 µl per "V" bottom well.

Cat. No.	*Qty.*
C2003	2 plates

96-Well PCR/Conversion Plate

96-well, non-skirted PCR plate with easy-to-read alphanumeric labels. Rimmed wells minimize cross contamination. Provided with adhesive, pierceable foil cover. Capacity is 200 µl per well.

Cat. No.	*Qty.*
C2008	2 plates
C2005	2 plates/foils

96-Well Block

96-Well Block features durable, clear polypropylene construction. Each has a level footprint and conforms to laboratory standards. Capacity is 2 ml per round bottom well.

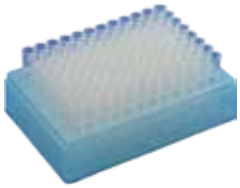
Cat. No.	*Qty.*
P1001-2	2 blocks
P1001-10	10 blocks

96-Well Block with Cover Foil

96-Well Block with Cover Foil feature durable, clear polypropylene construction. Each has a level footprint and conforms to laboratory standards. Provided with adhesive, pierceable foil cover. Capacity is 2 ml per round bottom well.

Cat. No.	*Qty.*
P1002-2	2 blocks/foils

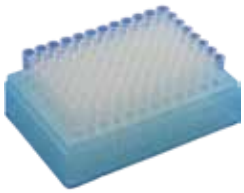
ZR-96 BashingBead™ Lysis Rack (0.5 mm)



Each impact resistant 1.1 ml tube contains 0.5 ml dry volume 0.5 mm ZR BashingBead™ lysis matrix. Tubes are in a 96-well rack with caps and a cover for high throughput processing. The state of the art, ultra-high density beads are fracture resistant, chemically inert, and ideal for disrupting tough-to-lyse biological samples. These beads are ideal for microbes and fungi in soil, feces, sludge, etc.

Cat. No.	*Qty.*
S6002-96-1	1 rack

ZR-96 BashingBead™ Lysis Rack (2.0 mm)



Each impact resistant 1.1 ml tube contains 0.5 ml dry volume 2.0 mm ZR BashingBead™ lysis matrix. Tubes are in a 96-well rack with caps and a cover for high throughput processing. The state of the art, ultra-high density beads are fracture resistant, chemically inert, and ideal for disrupting tough-to-lyse biological samples. These beads are ideal for tissues, insects, plant material, etc.

Cat. No.	*Qty.*
S6002-96-2	1 rack

96-Well Plate Cover Foil

Pierceable aluminum foil with strong adhesive strength for sealing 96-well plates and blocks. Ideal for cold storage. Dimensions are 82.6 x 132.6 mm.

Cat. No.	*Qty.*
C2007-2	2 foils
C2007-6	6 foils

Cell Disrupters & Accessories

TerraLyzer™

The TerraLyzer™ can be used to lyse microbes in soil, sediment, sludge, and fecal samples and can effectively process tough-to-lyse fungal, algal, plant, and animal tissues. It can be used at any remote location and in most weather conditions when immediate sample collection, processing, and preservation are required by the researcher. The device is compatible with most 2.0 ml tubes containing lysis matrix, though ZR BashingBead™ Tubes should be used to obtain maximum yields of DNA/RNA/Protein from tough-to-lyse and environmental sample sources.

Description	*Cat. No.*	*Qty.*
TerraLyzer™	S6022	1 unit

Disruptor Genie®

The Disruptor Genie® is an automated cell disruption device that is commonly used for the disruption and lysis of yeast, bacteria, and plant and animal tissue. Provided with a head assembly to accommodate up to (twelve) 2 ml tubes. Intended for use with ZR BashingBead™ Lysis Tubes.

Description	*Cat. No.*	*Qty.*
120V	S6001-2-120	1 unit
230V, European Plug	S6001-2-230	1 unit

Bullet Blender™

Homogenize tissue or disrupt/lyse cells in minutes. The Bullet Blender™ is a vortexer (at a low setting), a cell disrupter, and a tissue homogenizer (at a high setting) all in one unit. No parts contact the samples, eliminating the possibility of cross contamination. Available in 1.5 - 2 ml and 50 ml tube formats.

NEXT ››› ADVANCE

Description	*Cat. No.*	*Qty.*
BBX24 Bullet Blender™ (24 x 1.5 - 2.0 ml tubes)	S6007-1	1 unit
BBX24B Bullet Blender™ Blue (24 x 1.5 - 2.0 ml tubes) with cooling fan	S6007-2	1 unit
BB50-DX Bullet Blender™ 50-DX (9 x 50 ml tubes) with cooling fan	S6007-3	1 unit

FastPrep®-24

The FastPrep®-24 Instrument is an unique, high-speed benchtop homogenizer that employs a powerful, proprietary technology for the rapid lysis of almost any sample in 40 seconds or less. The FastPrep® Instrument makes it possible to isolate DNA, RNA, and protein from sources that are virtually impossible to lyse without the use of its rapid reciprocating motion.

Cat. No.	*Qty.*
S6005	1 unit

FastPrep® Accessories

A.

B.

C.

D.

Description	*Cat. No.*	*Qty.*
A. HiPrep™ Adapter (48 x 2 ml tubes)	S6005-1	1 unit
B. CoolPrep™ Adapter (24 x 2 ml tubes)	S6005-2	1 unit
C. TeenPrep™ Adapter (12 x 15 ml tubes)	S6005-3	1 unit
D. BigPrep™ Adapter (2 x 50 ml tubes)	S6005-4	1 unit
E. FastPrep® European AC Cord	S6005-5	1 unit

2010 Geno/Grinder®

Next generation high throughput tissue homogenizer and cell lyser. Accommodates a variety of formats ranging from deep-well titer plates to centrifuge tubes. Specifically designed for rapid cell disruption, lysis, and tissue homogenization while preserving temperature sensitive samples. Typical samples include plant and animal tissues, cell cultures, seeds, yeast, and bacteria. (For sale to US customers only).

SPEX SamplePrep

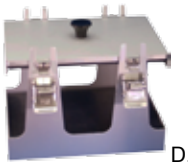
Cat. No.	*Qty.*
S6006	1 unit

2010 Geno/Grinder® Accessories


A.


B.


C.


D.

Description	*Cat. No.*	*Qty.*
A. 2 ml Tube Holder/Cryo Block Assembly (48 x 2.0 ml tubes/block)	S6006-1	2 blocks
B. 15 ml Tube Holder/Cryo Block Assembly (15 x 15 ml tubes/block)	S6006-2	2 blocks
C. 50 ml Tube Holder/Cryo Block Assembly (6 x 50 ml tubes/block)	S6006-3	2 blocks
D. Large Capacity Clamp Assembly	S6006-10	1 unit

Manual Homogenizers

Squisher™-Single

The Squisher™-Single features durable polypropylene construction and, although disposable, can be cleaned and reused to homogenize small samples of tissue in preparation for DNA, RNA, or protein extraction and purification. Works well with liver and brain tissue as well as mouse tail snips and small insects. Intended for use with conventional style 1.5 ml microcentrifuge tubes.

Cat. No.	*Qty.*
H1001	10 pack
H1001-50	50 pack

Squisher™-8 with 96-Well Block

The Squisher™-8 features durable polypropylene construction and although disposable, can be cleaned and reused to homogenize up to 8 small samples of tissue simultaneously in preparation for DNA, RNA, or protein extraction and purification. Works well with liver and brain tissue as well as mouse tail snips and small insects. Comes with 96-Well deep well blocks for efficient sample recovery.

Cat. No.	*Qty.*
H1002-5	5 pk / 1 block
H1002-20	20 pk / 2 blocks

Squisher™-96 with 96-Well Block

The Squisher™-96 features durable polypropylene construction and although disposable, can be cleaned and reused to homogenize up to 96 small samples of tissue simultaneously in preparation for DNA, RNA, or protein extraction and purification. Works well with liver and brain tissue as well as small insects. Comes with 96-Well deep-well blocks for efficient processing and sample recovery.

Cat. No.	*Qty.*
H1004-2	2 pk / 2 blocks
H1004-5	5 pk / 5 blocks

Plating Beads

Rattler™ Plating Beads

Rattler™ Plating Beads saves the researcher time and effort when plating either bacterial or yeast cells. Sterile glass plating beads are convenient and easy to use. 230 g/bottle. See p. 148 for more details.

Cat. No.	*Qty.*
S1001	1 bottle
S1001-5	5 bottles
S1001-B	25 kg bag (bulk)

Other Instruments & Accessories

Vortex-Genie® 2

The Vortex-Genie® 2 offers variable speed for precise mixing from gentle to vigorous, has Hands-free or Touch On control, and may be used in cold rooms or incubators. A broad range of attachments are available for most tubes, plates, and other containers. See next page.

Description	*Cat. No.*	*Qty.*
120V	S5001	1 unit
230V, European plug	S5002	1 unit

Digital Vortex-Genie® 2

The Digital Vortex-Genie® 2 has the same great features as Vortex-Genie® 2 with digital control and display of time. The digital display provides accuracy, reproducibility, and repeatability. Timer functions include Touch On (1-99 seconds) and Hands-free (1-99 minutes or continuous). May be used in cold rooms and incubators.

Description	*Cat. No.*	*Qty.*
120V	S5003	1 unit
230V, European plug	S5004	1 unit

Vortex-Genie® Family Accessories

A. & B.

C.

D.

Description	*Cat. No.*	*Qty.*
A. Microtube Foam Inserts: Accommodates up to 60 microtubes. Fits into 6 in. platform.	S5001-1	2 units
B. Microplate Foam Inserts: Accommodates one microplate. Fits into 6 in. platform.	S5001-2	2 units
C. 29-37mm Tube Foam Inserts: Fits into recessed platform.	S5001-3	2 units
D. Pop-off Cup: Mixing and vortexing in single tubes. Use with Vortex-Genie® 1, Disruptor Genie®, and the Vortex-Genie® 2 family.	S5001-4	1 unit


E.


F.


G.

Description	*Cat. No.*	*Qty.*
E. Horizontal 50 ml Tube Holder: Holds 6 tubes.	S5001-5	1 unit
F. Horizontal 15 ml Tube Holder: Holds 12 tubes. Use with any Vortex-Genie® 2 product.	S5001-6	1 unit
G. Horizontal Microtube Holder: Holds 24 microtubes. Use with any Vortex-Genie® 2.	S5001-7	1 unit

MicroPlate Genie®

The MicroPlate Genie® has a small vortexing orbit of 1.0 mm for thorough mixing regardless of sample viscosity. The high speed and small orbit combine to offer true vortexing action in each well of the microplate. It accepts most microplate types within the recommendations of the Society for Biomolecular Screening (SGBS), even 384-well formats.

Description	*Cat. No.*	*Qty.*
120V	S5005	1 unit
230V, European plug	S5006	1 unit

Roto-Shake Genie®

Roto-Shake Genie® combines rotating and rocking in one compact unit. The magnetic platform and various accessories securely holds almost any sample. A variety of attachments/accessories are available to provide maximum application versatility and it maintains a set speed between 0 - 38°C for use in cold rooms or incubators.

Description	*Cat. No.*	*Qty.*
120V	S5007	1 unit
230V, European plug	S5008	1 unit

MagStir Genie®

The MagStir Genie® allows programmable high/low speed stirring. High and low speed range including reverse and interval stirring for applications ranging from gentle stirring for cell culture to aggressive mixing for viscous polymers. There are three power levels for various sample viscosities. The low-profile magnetic stirrers use microprocessor control for precise and reproducible operation without heat build-up from internal friction.

Description	*Cat. No.*	*Qty.*
120V	S5009	1 unit
230V, European plug	S5010	1 unit

EZ-Vac™ Vacuum Manifold

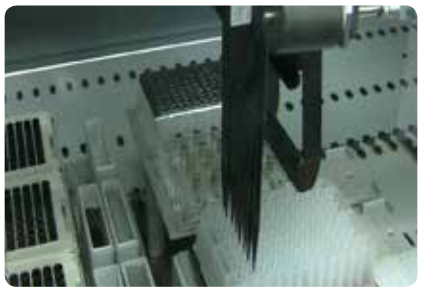
The EZ-Vac™ Vacuum Manifold features durable chemical-resistant construction and is capable of processing up to 20 samples simultaneously using vacuum pressure. The vacuum manifold allows researchers to simplify their nucleic acid purification workflows further by eliminating the need for multiple centrifugation steps and disposal of flow-through from collection tubes.

Cat. No.	*Qty.*
S7000	1 Manifold

Automation with Zymo Research

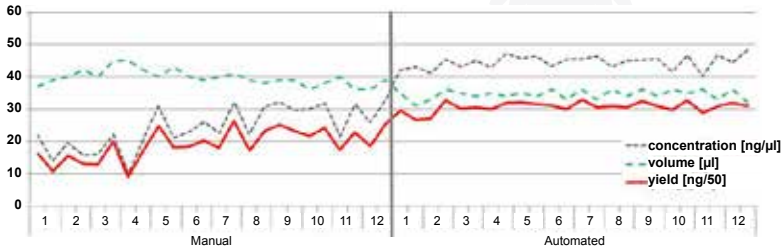
Zymo Research has adapted a number of technologies for high-throughput automation needs.

A summary of those currently available is listed here. Scripts are also available by contacting us at: tech@zymoresearch.com. Include "Automation Scripts" in the subject line and provide kit catalog number and the automation platform desired. If the product you are using is not listed here, don't despair; just contact us with your requirements, we are continually working toward additional product offerings.



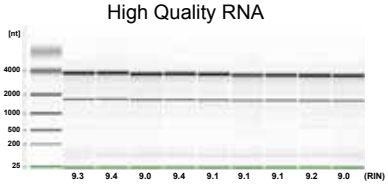
RNA Directly from TRI Reagent® – Now Automated!

Reproducible Sample Processing



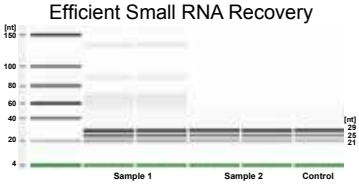
Comparison between manual and automated (Freedom EVO®, Tecan) sample processing with the Direct-zol™-96 MagBead RNA across a 96-Well plate. RNA was purified from human epithelial cells (5 x 10^5/well).

High Quality RNA



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

Efficient Small RNA Recovery



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

Product	*Cat. No.*	*Size*	*Page*
EZ-96 DNA Methylation™ MagPrep	D5040 D5041	4 x 96 8 x 96	13
EZ-96 DNA Methylation-Gold® MagPrep	D5042 D5043	4 x 96 8 x 96	14
EZ-96 DNA Methylation-Direct™ MagPrep	D5044 D5045	4 x 96 8 x 96	15
EZ-96 DNA Methylation-Lightning® MagPrep	D5046 D5047	4 x 96 8 x 96	16
Zyppy®-96 Plasmid MagBead Miniprep	D4100 D4101 D4102	2 x 96 4 x 96 8 x 96	82
ZR-96 Genomic-DNA™ MagPrep	D3083 D3084	2 x 96 4 x 96	93
Direct-zol-96™ MagPrep RNA (*TRI Reagent*® not included)	R2100 R2102 R2104	2 x 96 4 x 96 8 x 96	127
Direct-zol-96™ MagPrep RNA (supplied with *TRI Reagent*®)	R2101 R2103 R2105	2 x 96 4 x 96 8 x 96	127

Requesting a free sample kit has never been easier.

Sample-sized kits of some of our DNA / RNA purification and epigenetics technologies are available for your evaluation. Below is a list of our current offerings. Sample kits must be shipped to a valid *business or institution address*. For sample requests outside the US, please contact your nearest distributor.

Cat. No.	Kit	Size	Page
Epigenetics			
D5005S	EZ DNA Methylation-Gold® Kit	10 rxns.	14
D5020S	EZ DNA Methylation-Direct™ Kit	10 rxns.	15
D5030S	EZ DNA Methylation-Lightning® Kit	10 rxns.	16
DNA Purification			
D4003S	DNA Clean & Concentrator™-5	10 preps.	60
D4010S	Genomic DNA Clean & Concentrator®-10	5 preps.	67
D4001S	Zymoclean™ Gel DNA Recovery Kit	10 preps.	72
D4036S	Zyppy® Plasmid Miniprep Kit	10 preps.	81
D4068S	*Quick*-DNA™ Universal Kit	10 preps.	89
D6030S	OneStep™ PCR Inhibitor Removal Kit	5 preps.	71
RNA Purification			
R1015S	RNA Clean & Concentrator™-5	5 preps.	120
R1054S	*Quick-RNA*™ MiniPrep	5 preps.	129
R2050S	Direct-zol™ RNA MiniPrep	10 preps.	126
R1100-8-S	DNA/RNA Shield™	8 ml	139

Bisulfite Conversion

Product Chart

	EZ DNA Methylation-Startup™ Kit	EZ DNA Methylation™ Kit	EZ-96 DNA Methylation™ Kit	EZ DNA Methylation-Gold® Kit	EZ-96 DNA Methylation-Gold™ Kit	EZ DNA Methylation-Direct™ Kit	EZ-96 DNA Methylation-Direct™ Kit	EZ DNA Methylation-Lightning® Kit	EZ-96 DNA Methylation-Lightning® Kit	EZ RNA Methylation™ Kit
Specifications										
Format	Spin Column	Spin Column	96-Well	Spin Column	96-Well	Spin Column	96-Well	96-Well	Spin Column	Spin Column
Binding Capacity	50 pg - 2 µg	500 pg - 2 µg	500 pg - 2 µg	500 pg - 2 µg	500 pg - 2 µg	50 pg - 2 µg	50 pg - 2 µg	100 pg - 2 µg	100 pg - 2 µg	32 ng - 3 µg
Elution Volume	≥ 10 µl	≥ 10 µl	≥ 15 µl	≥ 10 µl	≥ 15 µl	≥ 10 µl	≥ 15 µl	≥ 10 µl	≥ 15 µl	≥ 10 µl
Conversion Efficiency	> 99.5%	> 99%	> 99%	> 99%	> 99%	> 99.5%	> 99.5%	> 99.5%	> 99.5%	> 99%
DNA Recovery	> 80%	> 80%	> 80%	> 75%	> 75%	> 80%	> 80%	> 80%	> 80%	> 80%
Processing Time[1]	4 hr.	12 - 16 hr.	12 - 16 hr.	3 hr.	3 hr.	4 hr.	4 hr.	1.5 hr.	1.5 hr.	1.25 hr.
Input										
DNA	•	•	•	•	•	•	•	•	•	
Blood/Tissues/Cells	•					•	•			
FFPE	•					•	•			
RNA										•
Applications										
Bisulfite Treatment	•	•	•	•	•	•	•	•	•	•
Rapid Column/Plate Desulfonation	•	•	•	•	•	•	•	•	•	•
Includes Methylated Control DNA w/ Primers	•									
Includes Zymo*Taq*™ DNA Polymerase	•									
Page Number	17	13	13	14	14	15	15	16	16	18

[1] *Processing time is for bisulfite treatment and clean-up*

5-mC Analysis
Product Chart

Specifications	5-mC DNA ELISA Kit	Methylated-DNA IP Kit	Anti-5-methylcytosine	OneStep qMethyl Kit
Size	96-well, 2 x 96-well	10 rxns	15 µg - 200 µg	96-well
Input	100 ng DNA	160 ng DNA	DNA	20 ng
Applications				
ELISA	•		•	
qPCR				•
Immunoprecipitation		•	•	
Immunoblotting			•	
Page Number	24	26	25	27

5-hmC Analysis
Product Chart

Specifications	Quest 5-hmC™ DNA ELISA Kit	Quest 5-hmC™ Detection Kit	Anti-5-hydroxymethylcytosine
Size	96-well, 2 x 96-well	25-50 preps	25 µg - 200 µg
Input	100 ng DNA	100-500 ng	DNA
Applications			
ELISA	•		•
qPCR		•	
Immunoprecipitation			•
Immunoblotting			•
Page Number	31	30	31

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Chromatin Analysis

Product Chart

Specifications	Zymo-Spin™ ChIP Kit	ChIP DNA Clean and Concentrator™	EZ Nucleosomal DNA Prep Kit
Format	Spin Column	Spin Column/96 well	Spin Column
Input	Cells/Tissue	≤ 5 µg ChIP DNA	≤ 25 µg DNA
Elution Volume	≥ 6 µl	≥6 µl	25 µl
Recovery	>70%	>70%	>70%
Processing Time	Varies	2 minutes	30 minutes
Applications			
ChIP	•		
ChIP Clean-up	•	•	
Nucleosomal DNA Isolation			•
Page Number	36	37	35

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Methylated DNA Standards

Product Chart

Specifications	Human Methylated and Non-Methylated DNA Set	Human WGA Methylated and Non-Methylated DNA Set	Universal Methylated Human DNA Standard	Universal Methylated Mouse DNA Standard	Bisulfite-Converted Universal Methylated Human DNA Standard	Human Matched DNA Set	5-mC and 5-hmC DNA Standard Set	Mouse 5-mC and 5-hmC DNA Set
Format	5 µg each DNA	5 µg each DNA	5 µg	5 µg	1 µg	5 µg each DNA	2 µg each DNA	5 µg each DNA
Applications								
Bisulfite Conversion	•	•	•	•	•			
ELISA Assays	•	•	•	•		•	•	•
LC/MS						•	•	
HPLC/TLC						•		
Includes Control Primers	•	•	•	•	•			
Page Number	22	22	23	23	22	34	34	34

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NGS Library Prep Kits

Product Chart

Specifications	Pico Methyl-Seq Library Prep Kit™	RRHP™ 5-hmC Library Prep Kit
Format	Spin Column	Spin Column
Input	≥ 10 pg	≥ 100 ng
Elution Volume	12 µl	15 µl
Applications		
Post-Bisulfite WGS Library Preparation	•	
5-hmC Library Preparation		•
Page Number	28	33

Enzymes for Methylation Analysis

Product Chart

Specifications	CpG Methylase (M.Sss1)	GpC Methylase (MCviPI)	DNA Degradase™	DNA Degradase™ Plus	5-hmC Glucosyltransferase
Size	200-400 units	200-1000 units	500-2000 units	250-1000 units	100-200 units
Global Analysis	•	•	•	•	•
Locus Specific Analysis	•	•			•
Applications					
qPCR	•	•			•
LC/MS				•	
HPLC			•	•	
TLC			•	•	
Page Number	38	38	42	42	39

DNA Clean-up
Product Chart

	DNA Clean & Concentrator® -5	ZR-96 DNA Clean & Concentrator® -5	DNA Clean & Concentrator® -25	DNA Clean & Concentrator® -100	DNA Clean & Concentrator® -500	ZR-96 DNA Clean-up Kit™	Oligo Clean & Concentrator™	ZR-96 Oligo Clean & Concentrator™	Select-a-Size™ DNA Clean & Concentrator®
Specifications									
Format	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well	Spin Column	96-Well	Spin Column
Binding Capacity	5 µg/prep.	5 µg/well	25 µg/prep.	100 µg/prep.	500 µg/prep.	5 µg/well	5 µg/prep.	5 µg/well	3µg/prep.
Elution Volume	≥ 6 µl	≥ 6 µl	≥ 25 µl	≥ 150 µl	≥ 2 ml	≥ 30 µl	≥ 6 µl	≥ 10 µl	≥ 10 µl
Processing Time	2 min.	15 min.	2 min.	15 min.	25 min.	20 min.	2 min.	20 min.	7 min.
Applications									
cDNA/ssDNA Purification	•	•	•	•	•	•			
M13 Phage DNA	•	•	•	•	•	•			
PCR Clean-up	•	•	•	•	•	•			•
Enzyme Removal	•	•	•	•	•	•	•	•	
dNTP/Dye Removal	•	•	•	•	•	•	•	•	
Probe Purification	•	•	•	•	•	•	•	•	
DNA/RNA Oligo Clean-up							•	•	
High Molecular Weight DNA Clean-up									
Size Selection (eg. Library Prep, primer dimer removal)									•
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DNA Clean-up
Product Chart

	Genomic DNA Clean & Concentrator® -10	Genomic DNA Clean & Concentrator® -25	ZR-96 Genomic DNA Clean & Concentrator® -5	ZR DNA Sequencing Clean-up Kit™	ZR-96 DNA Sequencing Clean-up Kit™	OneStep™ PCR Inhibitor Removal	OneStep-96™ PCR Inhibitor Removal	Zymoclean™ Gel DNA Recovery Kit	ZR-96 Zymoclean™ Gel DNA Recovery Kit	Zymoclean™ Large Fragment DNA Recovery Kit
Specifications										
Format	Spin Column	Spin Column	96-Well	Spin Column	96-Well	Spin Column	96-Well	Spin Column	96-Well	Spin Column
Binding Capacity	10 µg/prep	25 µg/prep	5 µg/prep	5 µg/prep	5 µg/well	No DNA/RNA Binding	No DNA/RNA Binding	5 µg/prep	5 µg/well	10 µg
Elution Volume	≥ 10 µl	≥15 µl	≥15 µl	≥ 6 µl	≥ 15 µl	50-200 µl	50-100 µl	≥ 6 µl	≥ 15 µl	≥ 10 µl
Processing Time	5 min.	5 min.	20 min.	2 min.	10 min.	5 min.	10 min.	15 min.	20 min.	15 min.
Applications										
PCR Clean-up	•	•	•							
Enzyme Removal	•	•	•	•	•					
dNTP/Dye Removal	•	•	•	•	•					
Probe Purification				•	•					
High Molecular Weight DNA Clean-up	•	•	•							
Sequencing DNA Clean-up				•	•					
Dye Terminator Removal				•	•					
Removal of Polyphenolic Inhibitors						•	•			
DNA From Agarose Gel Slices								•	•	
Large DNA From Agarose Gel Slices										•
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Plasmid DNA Purification

Product Chart

Specifications	Zyppy™ Plasmid Miniprep Kit	Zyppy™ -96 Plasmid MiniPrep Kit	Zyppy™ -96 Plasmid Magbead MiniPrep	Zyppy™ Plasmid Midiprep Kit	Zyppy™ Plasmid Maxiprep Kit	ZymoPURE™ Plasmid MidiPrep Kit	ZymoPURE™ Plasmid MaxiPrep Kit	ZymoPURE™ Plasmid GigaPrep Kit	ZR Plasmid Miniprep™ -Classic	ZR BAC DNA Miniprep Kit	Zymoprep™ Yeast Plasmid Miniprep I	Zymoprep™ Yeast Plasmid Miniprep II
Format	Spin Column	96-Well	Magnetic Beads	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column	Isopropanol Precipitation	Spin Column
Binding Capacity	25 µg/prep.	5 µg/well	10 µg/prep.	125 µg/prep.	500 µg/prep.	300 µg/prep.	1.2 mg/prep.	10 mg/prep.	25 µg/prep.	10 µg/prep.		5 µg/prep.
Elution Volume	≥ 30 µl	≥ 30 µl	≥ 30 µl	≥ 150 µl	≥ 2 ml	≥ 100 µl	≥ 200 µl	≥ 2 ml	≥ 30 µl	≥ 10 µl	≥ 35 µl	≥ 10 µl
Processing Time	8 min.	45 min.	1 hr.	15 min.	30 min.	18 min.	18 min.	50 min.	15 min.	15 min.	15 min.	25 min.
Culture Input	600 µl - 3 ml	750 µl	750 µl	6 - 35 ml	up to 150 ml	50 ml	150 ml	2.5 L	up to 15 ml	500 µl - 5 ml	.5 - 1 ml	.1-1.5 ml
Typical Yield	2 - 15 µg	2 - 5 µg	up to 10µg	20 - 100 µg	up to 500 µg	up to 300 µg	up to 1.2 mg	up to 10 mg	20 - 100 µg	up to 10µg	0.01-0.3 ng	
Applications												
Endotoxin Free	•	•	•	•	•	•	•	•	•	•	•	•
Pellet-free (Direct From Culture)	•	•	•	•	•							
Plasmid Recovery From E. *coli*	•	•	•	•	•	•	•	•	•			
Large Plasmid Recovery From E. *coli*										•		
Plasmid Recovery From Yeast											•	•
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Genomic DNA Purifcation

Product Chart

	Quick-DNA™ Universal Kit	Quick-DNA™ Universal 96 Kit	Quick-gDNA™ MicroPrep	Quick-gDNA™ MiniPrep	Quick-gDNA™ MidiPrep	ZR-96 Quick-gDNA™	Quick-DNA™ Urine Kit	Quick-DNA™ Serum & Plasma Kit	ZR FFPE DNA Miniprep™	Pinpoint® Slide DNA Isolation System	YeaStar™ Genomic DNA Kit	ZR Viral DNA Kit™	ZR-96 Viral DNA Kit™	ZymoBead™ Genomic DNA Kit
Specifications														
Format	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column	96-Well	Affinity Beads
Binding Capacity	5 µg/prep.	5 µg/well	5 µg/prep.	25 µg/prep.	125 µg/prep.	5 µg/well	5 µg/prep.	5 µg/prep.	5 µg/prep.	5 µg/prep.	25 µg/prep.	5 µg	5 µg	Scalable
Elution Volume	≥ 35 µl	≥ 15 µl	≥ 10 µl	≥ 50 µl	≥ 150 µl	≥ 30 µl	≥ 10 µl	≥ 35 µl	≥ 6 µl	≥ 10 µl	≥ 60 µl	≥ 6 µl	≥ 10 µl	Scalable
Processing Time	15 min.	45 min.	15 min.	15 min.	30 min.	30 min.	15 min.	varies	1 hr.	5 hr.	30 min.	15 min.	25 min.	20 min.
Applications/Samples														
Cultured Cells	•	•	•	•	•	•						•	•	•
Buccal Cells/Swabs/Saliva	•	•	•	•	•	•								•
Whole Blood	•	•	•	•	•	•						•	•	•
Semen	•	•	•	•	•	•								•
Fresh/Frozen Soft Tissue	•	•	•	•	•	•								•
Fresh/Frozen Solid Tissue	•	•							•					
Tail Snips/Ear Punches	•	•												
Hair and Feathers	•	•												
FFPE Tissue Sections									•	•				
Tissue Sections										•				
Mitochondria	•	•	•	•	•	•								•
Viral DNA	•	•										•	•	
Plasma/Serum -Cell Free DNA								•				•	•	•
Urine -Cell Free & Cellular DNA							•							
Urine Sediment	•	•					•							
Cerebrospinal Fluid								•						
Amniotic Fluid								•						
Microbes previously lysed with enzymes or mechanical methods	•	•	•	•	•	•								
Fungi Susceptible to Yeast Lytic Enzyme											•			
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Environmental DNA Purification

Product Chart

	ZR Fecal DNA MicroPrep™	ZR Fecal DNA MiniPrep™	ZR Fecal DNA MidiPrep™	ZR-96 Fecal DNA Kit™	ZR Soil Microbe DNA MicroPrep™	ZR Soil Microbe DNA MiniPrep™	ZR Soil Microbe DNA MidiPrep™	ZR-96 Soil Microbe DNA Kit™	ZR Fungal/Bacterial DNA MicroPrep™	ZR Fungal/Bacterial DNA MiniPrep™	ZR Fungal/Bacterial DNA MidiPrep™	ZR-96 Fungal/Bacterial DNA Kit™
Specifications												
ZR BashingBead™ Lysis	•	•	•	•	•	•	•	•	•	•	•	•
Format	Spin Column	Spin Column	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well
Binding Capacity	5 µg/prep.	25 µg/prep.	125 µg/prep.	5 µg/well	5 µg/prep	25 µg/prep.	125 µg/prep.	5 µg/well	5 µg/prep.	25 µg/prep.	125 µg/prep.	5µg/well
Elution Volume	≥ 10 µl	≥ 25 µl	≥ 150 µl	≥ 25 µl	≥ 10 µl	≥ 25 µl	≥ 150 µl	≥ 25 µl	≥ 10 µl	≥ 25 µl	≥ 150 µl	≥ 25 µl
Removal of Humic, Fulvic, and Polyphenolic Substances	•	•	•	•	•	•	•	•				
Processing Time	15 min.	15 min.	25 min.	50 min.	15 min.	15 min.	25 min.	50 min.	10 min.	10 min.	20 min.	40 min.
Applications												
Environmental Sources												
Soil					•	•	•	•				
Sediment					•	•	•	•				
Sludge					•	•	•	•				
Feces	•	•	•	•								
Microorganisms												
Bacteria	•	•	•	•	•	•	•	•	•	•	•	•
Fungi	•	•	•	•	•	•	•	•	•	•	•	•
Algae	•	•	•	•	•	•	•	•	•	•	•	•
Protists	•	•	•	•	•	•	•	•	•	•	•	•
Tough-to-Lyse Tissues												
Soft Tissues	some	some	some	some	some	some	some	some	some	some	some	some
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Environmental DNA Purification

Product Chart

	ZR Plant/Seed DNA MicroPrep™	ZR Plant/Seed DNA MiniPrep™	ZR-96 Plant/Seed DNA Kit™	ZR Tissue & Insect DNA MicroPrep™	ZR Tissue & Insect DNA MiniPrep™	ZR Tissue & Insect DNA MidiPrep™	ZR -96 Tissue & Insect DNA Kit™
Specifications							
ZR BashingBead™ Lysis	•	•	•	•	•	•	•
Format	Spin column	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well
Binding Capacity	5 µg/prep.	25 µg/prep.	5 µg/well	5 µg/prep.	25 µg/prep.	125 µg/prep.	5 µg/well
Elution Volume	≥ 10 µl	≥ 25 µl	≥ 25 µl	≥ 10 µl	≥ 25 µl	≥ 150 µl	≥ 25 µl
Removal of Humic, Fulvic, and Polyphenolic Substances	•	•	•				
Processing Time	15 min.	15 min.	50 min.	10 min.	10 min.	20 min.	40 min.
Applications							
Tough-to-Lyse Tissues							
Soft Tissues				•	•	•	•
Solid Tissues (Food)				•	•	•	•
Tough-to-Lyse Tissues				•	•	•	•
Tough-to-Lyse Organisms				•	•	•	•
Insects/Arthropods				•	•	•	•
Plant Material	•	•	•				
Seeds	•	•	•				
Fruit	•	•	•				
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DNA/RNA Co-Purification

Product Chart

Specifications	ZR-Duet™ DNA/RNA Miniprep	ssDNA/RNA Clean & Concentrator™	ZR-Viral DNA/RNA Kit	ZR-96 Viral DNA /RNA Kit™
Format	Spin Column	Spin Column	Spin Column	96-Well
Binding Capacity	25 µg DNA 25 µg RNA	10 µg/prep.	5 µg/prep.	5 µg/well
Elution Volume	≥ 50 µl DNA ≥ 25 µl RNA	≥ 6 µl	≥ 6 µl	≥ 10 µl
Processing Time	15 min.	10 min.	5 min.	15 min.
Applications				
Parallel Purification	•			
Co-Purification		•	•	•
Fresh/Frozen Soft Tissue	•			
Fresh/Frozen Solid Tissue	limited			
Bacteria	limited			
Yeast	limited			
Buffy Coat	•			
Cultured Cells	•			
Small RNA	•	•		
Probe Purification		•		
Whole Blood (≤ 50 µl)			•	•
Plasma/Serum			•	•
Virus			•	•
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RNA Clean-up
Product Chart

	RNA Clean & Concentrator™ -5	RNA Clean & Concentrator™ -25	RNA Clean & Concentrator™ -100	ZR-96 RNA Clean & Concentrator™	Zymoclean™ Gel RNA Recovery Kit	ZR small-RNA™ PAGE Recovery Kit	OneStep™ PCR Inhibitor Removal	OneStep™ -96 PCR Inhibitor Removal
Specifications								
Format	Spin Column	Spin Column	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	96-Well
Binding Capacity	10 µg/prep.	50 µg/prep.	250 µg/prep.	25 µg/well	5 µg/prep.	5 µg/prep.	No DNA/RNA Binding	
Elution Volume	≥ 6 µl	≥ 25 µl	≥ 200 µl	≥ 10 µl	≥ 6 µl	≥ 6 µl	50 - 200 µl	50 - 100 µl
Processing Time	5 min.	5 min.	10 min.	20 min.	30 min.	45 min.	5 min.	10 min.
Applications								
RNA Clean-up	•	•	•	•				
DNA-free RNA	•	•	•	•				
Enzyme Removal	•	•	•	•				
Nucleotide/Dye Removal	•	•	•	•				
Small-RNA/Probe Purification	•	•	•	•				
RNA From Agarose Gel Slices					•			
RNA From Polyacrylamide Gel Slices						•		
Removal of Polyphenolic RT Inhibitors							•	•
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RNA Isolation

Product Chart

	Direct-zol™ RNA MicroPrep Kit	Direct-zol™ RNA MiniPrep Kit	Direct-zol™ RNA MiniPrep Plus	Direct-zol™ -96 RNA	Direct-zol™ -96 MagBead RNA	Quick-RNA™ MicroPrep Kit	Quick-RNA™ MiniPrep Kit	Quick-RNA™ MiniPrep Plus	Quick-RNA™ MidiPrep Kit	ZR-96 Quick-RNA™
Specifications										
Format	Spin Column	Spin Column	Spin Column	96-Well	96-Well	Spin Column	Spin Column	Spin Column	Spin Column	96-Well
Binding Capacity	10 µg/prep.	50 µg/prep.	100 µg/prep.	10 µg/well	100 µg/well	10 µg/prep.	100 µg/prep.	100 µg/prep.	250 µg/prep.	10 µg/well
Elution Volume	≥ 6 µl	≥ 25 µl	≥ 50 µl	≥ 10 µl	≥ 50 µl	≥ 6 µl	≥ 50 µl	≥ 50 µl	≥ 200 µl	≥ 25 µl
Processing Time	10 min.	10 min.	10 min.	30 min.	2 hr.	10 min.	10 min.	10 min.	10 min.	30 min.
Features										
Isolation from TRIzol®, TRI Reagent®, etc.	•	•	•	•	•					
Non-Organic Extraction						•	•	•	•	•
Viral Inactivation	•	•	•	•	•			•		
Small RNA Purification	•	•	•	•	•	•	•	•	•	•
DNA/RNA Shield™ Compatible	•	•	•	•	•	•	•	•	•	•
Applications										
Fresh/Frozen Soft Tissue	•	•	•	•	•	•	•	•	•	•
Cultured Cells	•	•	•	•	•	•	•	•	•	•
Buccal Cells/Swabs	•	•	•	•	•	•	•	•	•	•
Buffy Coat	•	•	•	•	•	•	•	•	•	•
Whole Blood	•	•	•	•	•			•		
Plasma/Serum	•	•	•	•	•			•		
Virus	•	•	•	•	•			•		
Biological Fluids						•	•	•	•	•
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RNA Isolation

Product Chart

	ZR Viral RNA Kit™	ZR-96 Viral RNA Kit™	ZR Urine RNA Isolation Kit™	Pinpoint™ Slide RNA Isolation System I Kit	Pinpoint™ Slide RNA Isolation System II Kit	YeaStar™ RNA Kit
Specifications						
Format	Spin Column	96-Well	Spin Column	Spin Column	Spin Column	Spin Column
Binding Capacity	10 µg/prep.	10 µg/well	10 µg/prep	10 µg/prep.	10 µg/prep.	5 µg/prep.
Elution Volume	≥ 6 µl	≥ 10 µl	≥ 10 µl	≥ 10 µl	≥ 10 µl	≥ 60 µl
Processing Time	6 min.	15 min.	15 min.	1.5 hr.	5 hr.	30 min.
Applications						
Frozen Tissue Sections				•		
Fixed Tissue Sections					•	
Buccal Cells/Swabs	•	•				
Plasma/Serum	•	•				
Urine			•			
Virus	•	•				
Microvesicles			•			
Exosomes			•			
Fungi Susceptible to Yeast Lytic Enzyme						•
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Environmental RNA Purification

Product Chart

Specifications	ZR Soil/Fecal RNA MicroPrep™	ZR Fungal/Bacterial RNA MicroPrep™	ZR Fungal/Bacterial RNA MiniPrep™	ZR Tissue & Insect RNA MicroPrep™	ZR Plant RNA MiniPrep™
Format	Spin Column	Spin Column	Spin Column	Spin Column	Spin Column
Binding Capacity	10 µg/prep.	10 µg/prep.	50 µg/prep.	10 µg/prep.	50 µg/prep.
Elution Volume	≥ 6 µl	≥ 6 µl	≥ 25 µl	≥ 6 µl	≥ 25 µl
Removal of Polyphenolic RT Inhibitors	•				•
Processing Time	20 min.	15 min.	15 min.	15 min.	15 min.
Applications					
Soil	•				
Sediment	•				
Sludge	•				
Feces	•				
Bacteria	•	•	•		
Fungi	•	•	•		
Algae	•	•	•		
Protists	•	•	•		
Food		•	•	•	
Soft Tissues				•	
Tough-to-Lyse Tissues				•	
Tough-to-Lyse Organisms				•	
Insects/Arthropods				•	
Plant Material					•
Seeds					•
Fruit					•
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C2008	96-Well PCR/Conversion Plate	2 plates	183
C2009	Silicon-A™-HRC Plate	2 plates	182
C2010	Zymo-Spin™ I-96-XL Plate	2 plates	182
C2011-2	Air Permeable Sealing Cover	2 pack	
C2011-4	Air Permeable Sealing Cover	4 pack	
C2011-8	Air Permeable Sealing Cover	8 pack	
C2020	96-Well ELISA Plate, 12 x 8-well strips	1 Plate	
D1000	dNTP Mix [10 mM]	500 µl	44
D1000-1	dNTP Mix [10 mM]	100 µl	44
D1005	dATP [100 mM]	250 µl	44
D1010	dTTP [100 mM]	250 µl	44
D1015	dGTP [100 mM]	250 µl	44
D1020	dCTP [100 mM]	250 µl	44
D1030	5-Methylcytosine dNTP Mix [10 mM]	250 µl	44
D1035	5-Methyl dCTP [10 mM]	100 µl	44
D1040	5-Hydroxymethylcytosine dNTP Mix [10 mM]	250 µl	44
D1045	5-Hydroxymethyl dCTP [100 mM]	100 µl	44
D2001	Zymoprep™ Yeast Plasmid Miniprep I	100 preps.	86
D2001-1-15	Solution 1, Digestion Buffer	15 ml	
D2001-2-15	Solution 2, Lysis Buffer	15 ml	
D2001-3-15	Solution 3, Neutralizing Buffer	15 ml	
D2002	YeaStar™ Genomic DNA Kit	40 preps.	96
D2002-1	YD Digestion Buffer	4.8 ml	
D2002-2	YD Lysis Buffer	4.8 ml	
D2004	Zymoprep™ Yeast Plasmid Miniprep II	50 preps.	86
D2004-1-10	Solution 1, Digestion Buffer	10 ml	
D2004-2-10	Solution 2, Lysis Buffer	10 ml	
D2004-3-20	Solution 3, Neutralizing Buffer	20 ml	
D3001	Pinpoint® Slide DNA Isolation System	50 preps.	95
D3001-1	Pinpoint® Solution	1 ml	
D3001-2-5	Proteinase K with Storage Buffer	5 mg	164
D3001-2-20	Proteinase K with Storage Buffer	20 mg	164
D3001-3	Pinpoint® Extraction Buffer	2.5 ml	
D3001-4	Pinpoint® Binding Buffer	6 ml	
D3001-5	Pinpoint® Wash Buffer	2.4 ml	
D3004	ZymoBead™ Genomic DNA Kit	~100 preps.	113
D3004-1-50	Genomic Lysis Buffer	50 ml	
D3004-1-100	Genomic Lysis Buffer	100 ml	
D3004-1-150	Genomic Lysis Buffer	150 ml	
D3004-1-200	Genomic Lysis Buffer	2 x 100 ml	
D3004-1-250	Genomic Lysis Buffer	250 ml	
D3004-1-1000	Genomic Lysis Buffer	1000 ml	
D3004-2-50	g-DNA Wash Buffer	50 ml	
D3004-2-100	g-DNA Wash Buffer	100 ml	
D3004-2-200	g-DNA Wash Buffer	200 ml	
D3004-2-250	g-DNA Wash Buffer	250 ml	
D3004-2-400	g-DNA Wash Buffer	4 x 100 ml	
D3004-3-1	ZymoBeads™	1 ml	181
D3004-3-4	ZymoBeads™	4 x 1 ml	181
D3004-4-1	DNA Elution Buffer	1 ml	
D3004-4-4	DNA Elution Buffer	4 ml	
D3004-4-10	DNA Elution Buffer	10 ml	
D3004-4-16	DNA Elution Buffer	16 ml	
D3004-4-50	DNA Elution Buffer	50 ml	
D3004-5-15	DNA Pre-wash Buffer	15 ml	
D3004-5-30	DNA Pre-wash Buffer	30 ml	
D3004-5-50	DNA Pre-wash Buffer	50 ml	
D3004-5-250	DNA Pre-wash Buffer	250 ml	
D3005	ZymoBead™ Genomic DNA Kit	~400 preps.	113
D3006	*Quick*-gDNA™ MiniPrep (uncapped)	50 preps.	92
D3007	*Quick*-gDNA™ MiniPrep (uncapped)	200 preps.	92
D3010	ZR-96 *Quick*-gDNA™	2 x 96 preps.	92
D3011	ZR-96 *Quick*-gDNA™	4 x 96 preps.	92
D3012	ZR-96 *Quick*-gDNA™	10 x 96 preps.	92
D3013	ZR Serum DNA Kit™	< 80 ml serum	113
D3015	ZR Viral DNA Kit™	50 preps.	97
D3015-1-50	ZR Viral DNA Buffer	50 ml	
D3016	ZR Viral DNA Kit™	200 preps.	97
D3016-1-100	ZR Viral DNA Buffer	100 ml	
D3017	ZR-96 Viral DNA Kit™	2 x 96 preps.	97
D3018	ZR-96 Viral DNA Kit™	4 x 96 preps.	97
D3020	*Quick*-gDNA™ MicroPrep	50 preps.	92
D3021	*Quick*-gDNA™ MicroPrep	200 preps.	92
D3024	*Quick*-gDNA™ MiniPrep (capped)	50 preps.	92
D3025	*Quick*-gDNA™ MiniPrep (capped)	200 preps.	92
D3040	ZR Genomic DNA™-Tissue MicroPrep	50 preps.	93
D3041	ZR Genomic DNA™-Tissue MicroPrep	200 preps.	93
D3050	ZR Genomic DNA™-Tissue MiniPrep	50 preps.	93
D3050-1-5	2X Digestion Buffer	5 ml	
D3050-1-20	2X Digestion Buffer	20 ml	
D3050-1-80	2X Digestion Buffer	80 ml	
D3051	ZR Genomic DNA™-Tissue MiniPrep	200 preps.	93
D3055	ZR-96 Genomic DNA™-Tissue MiniPrep	2 x 96 preps.	93
D3056	ZR-96 Genomic DNA™-Tissue MiniPrep	4 x 96 preps.	93
D3057	ZR-96 Genomic DNA™-Tissue MiniPrep	10 x 96 preps.	93
D3060	ZR Urine DNA Isolation Kit™	20 preps.	113
D3061	*Quick*-DNA™ Urine Kit	50 preps.	90
D3065	ZR FFPE DNA MiniPrep™	50 preps.	94
D3066	ZR FFPE DNA MiniPrep™	200 preps.	94
D3070	*Quick*-gDNA™ Blood MicroPrep	50 preps.	113
D3071	*Quick*-gDNA™ Blood MicroPrep	200 preps.	113
D3072	*Quick*-gDNA™ Blood MiniPrep	50 preps.	113
D3073	*Quick*-gDNA™ Blood MiniPrep	200 preps.	113
D3074	*Quick*-gDNA™ Blood MidiPrep	25 preps.	113
D3075	ZR-96 *Quick*-gDNA™ Blood	2 x 96 preps.	113
D3076	ZR-96 *Quick*-gDNA™ Blood	4 x 96 preps.	113
D3077	ZR-96 *Quick*-gDNA™ Blood	10 x 96 preps.	113
D3083	ZR-96 Genomic DNA™ MagPrep	2 x 96 preps.	93
D3084	ZR-96 Genomic DNA™ MagPrep	4 x 96 preps.	93
D3100	*Quick*-gDNA™ MidiPrep	25 preps.	92
D3110	ZR Genomic DNA™-Tissue MidiPrep	25 preps.	93
D4001	Zymoclean™ Gel DNA Recovery Kit (uncapped)	50 preps.	72
D4001-1-50	ADB (Agarose Dissolving Buffer)	50 ml	

Cat. No.	Description	Size	Page
D4001-1-100	ADB (Agarose Dissolving Buffer)	100 ml	
D4002	Zymoclean™ Gel DNA Recovery Kit (uncapped)	200 preps.	72
D4003	DNA Clean & Concentrator®-5 (uncapped)	50 preps.	60
D4003-1-L	DNA Binding Buffer	50 ml	
D4003-1-25	DNA Binding Buffer	25 ml	
D4003-2-6	DNA Wash Buffer	6 ml	
D4003-2-24	DNA Wash Buffer	24 ml	
D4003-2-48	DNA Wash Buffer	48 ml	
D4004	DNA Clean & Concentrator®-5 (uncapped)	200 preps.	60
D4004-1-L	DNA Binding Buffer	100 ml	
D4005	DNA Clean & Concentrator®-25 (uncapped)	50 preps.	61
D4006	DNA Clean & Concentrator®-25 (uncapped)	200 preps.	61
D4007	Zymoclean™ Gel DNA Recovery Kit (capped)	50 preps.	72
D4008	Zymoclean™ Gel DNA Recovery Kit (capped)	200 preps.	72
D4010	Genomic DNA Clean & Concentrator®-10	25 preps.	67
D4010-1-50	DNA Isolation Buffer	50 ml	
D4010-1-100	DNA Isolation Buffer	100 ml	
D4011	Genomic DNA Clean & Concentrator®-10	100 preps.	67
D4013	DNA Clean & Concentrator®-5 (capped)	50 preps.	60
D4014	DNA Clean & Concentrator®-5 (capped)	200 preps.	60
D4015	ZR Plasmid Miniprep™-*Classic*	100 preps.	84
D4016	ZR Plasmid Miniprep™-*Classic*	400 preps.	84
D4017	ZR-96 DNA Clean-up Kit™	2 x 96 preps.	64
D4018	ZR-96 DNA Clean-up Kit™	4 x 96 preps.	64
D4019	Zyppy® Plasmid Miniprep Kit	100 preps.	81
D4020	Zyppy® Plasmid Miniprep Kit	400 preps.	81
D4021	ZR-96 Zymoclean™ Gel DNA Recovery Kit	2 x 96 preps.	72
D4022	ZR-96 Zymoclean™ Gel DNA Recovery Kit	4 x 96 preps.	72
D4023	ZR-96 DNA Clean & Concentrator®-5	2 x 96 preps.	60
D4024	ZR-96 DNA Clean & Concentrator®-5	4 x 96 preps.	60
D4025	Zyppy® Plasmid Midiprep Kit	25 preps.	83
D4026	Zyppy® Plasmid Midiprep Kit	50 preps.	83
D4027	Zyppy® Plasmid Maxiprep Kit	10 preps.	113
D4027-1-10	Buffer P1	10 ml	
D4027-1-20	Buffer P1	20 ml	
D4027-1-80	Buffer P1	80 ml	
D4027-1-160	Buffer P1	160 ml	
D4027-1-320	Buffer P1	320 ml	
D4027-2-10	Buffer P2	10 ml	
D4027-2-20	Buffer P2	20 ml	
D4027-2-80	Buffer P2	80 ml	
D4027-2-160	Buffer P2	160 ml	
D4027-2-250	Buffer P2	250 ml	
D4027-2-320	Buffer P2	320 ml	
D4027-3-12	Buffer P3	12 ml	
D4027-3-50	Buffer P3	50 ml	
D4027-3-220	Buffer P3	220 ml	
D4027-3-440	Buffer P3	440 ml	
D4027-4-6	Plasmid Wash Buffer (concentrate)	6 ml	
D4027-4-12	Plasmid Wash Buffer (concentrate)	12 ml	
D4027-4-24	Plasmid Wash Buffer (concentrate)	24 ml	
D4027-4-48	Plasmid Wash Buffer (concentrate)	48 ml	

Cat. No.	Description	Size	Page
D4028	Zyppy® Plasmid Maxiprep Kit	20 preps.	113
D4029	DNA Clean & Concentrator®-100	25 preps.	62
D4030	DNA Clean & Concentrator®-100	50 preps.	62
D4031	DNA Clean & Concentrator®-500	10 preps.	63
D4032	DNA Clean & Concentrator®-500	20 preps.	63
D4033	DNA Clean & Concentrator®-25 (capped)	50 preps.	61
D4034	DNA Clean & Concentrator®-25 (capped)	200 preps.	61
D4036	Zyppy® Plasmid Miniprep Kit	50 preps.	81
D4036-1-6	7X Lysis Buffer	6 ml	
D4036-1-12	7X Lysis Buffer	12 ml	
D4036-1-30	7X Lysis Buffer	30 ml	
D4036-1-48	7X Lysis Buffer	48 ml	
D4036-1-60	7X Lysis Buffer	60 ml	
D4036-2-20	Neutralization Buffer	20 ml	
D4036-2-40	Neutralization Buffer	40 ml	
D4036-2-100	Neutralization Buffer	100 ml	
D4036-2-160	Neutralization Buffer	160 ml	
D4036-2-200	Neutralization Buffer	200 ml	
D4036-3-6	Endo-Wash Buffer	6 ml	
D4036-3-15	Endo-Wash Buffer	15 ml	
D4036-3-30	Endo-Wash Buffer	30 ml	
D4036-3-60	Endo-Wash Buffer	60 ml	
D4036-3-120	Endo-Wash Buffer	120 ml	
D4036-3-240	Endo-Wash Buffer	240 ml	
D4036-4-6	Zyppy® Wash Buffer	6 ml	
D4036-4-12	Zyppy® Wash Buffer	12 ml	
D4036-4-24	Zyppy® Wash Buffer	24 ml	
D4036-4-48	Zyppy® Wash Buffer	48 ml	
D4036-5-5	Zyppy® Elution Buffer	5 ml	
D4036-5-10	Zyppy® Elution Buffer	10 ml	
D4036-5-20	Zyppy® Elution Buffer	20 ml	
D4036-5-30	Zyppy® Elution Buffer	30 ml	
D4036-5-60	Zyppy® Elution Buffer	60 ml	
D4036-5-100	Zyppy® Elution Buffer	100 ml	
D4037	Zyppy® Plasmid Miniprep Kit	800 preps.	81
D4041	Zyppy®-96 Plasmid Miniprep	2 x 96 preps.	82
D4041-1-30	Deep Blue Lysis Buffer	30 ml	
D4041-1-48	Deep Blue Lysis Buffer	48 ml	
D4041-4-100	Neutralization/Clearing Buffer	100 ml	
D4041-4-200	Neutralization/Clearing Buffer	200 ml	
D4042	Zyppy®-96 Plasmid Miniprep	4 x 96 preps.	82
D4043	Zyppy®-96 Plasmid Miniprep	8 x 96 preps.	82
D4045	Zymoclean™ Large Fragment DNA Recovery Kit	25 preps.	73
D4046	Zymoclean™ Large Fragment DNA Recovery Kit	100 preps.	73
D4048	ZR BAC DNA Miniprep Kit	25 preps.	85
D4049	ZR BAC DNA Miniprep Kit	100 preps.	85
D4050	ZR DNA Sequencing Clean-up Kit™	50 preps.	70
D4050-1-14	Sequencing Binding Buffer	14 ml	
D4050-1-55	Sequencing Binding Buffer	55 ml	
D4050-1-500	Sequencing Binding Buffer	500 ml	

Cat. No.	Description	Size	Page
D4050-2-20	Sequencing Wash Buffer	20 ml	
D4050-2-70	Sequencing Wash Buffer	70 ml	
D4050-2-500	Sequencing Wash Buffer	500 ml	
D4051	ZR DNA Sequencing Clean-up Kit™	200 preps.	70
D4052	ZR-96 DNA Sequencing Clean-up Kit™	2 x 96 preps.	70
D4053	ZR-96 DNA Sequencing Clean-up Kit™	4 x 96 preps.	70
D4054	ZR Plasmid Miniprep™-*Classic*	800 preps.	84
D4056	ZR Plasmid Gigaprep Kit	5 preps.	113
D4057	ZR Plasmid Gigaprep Kit	10 preps.	113
D4060	Oligo Clean & Concentrator™	50 preps.	65
D4060-1-10	Oligo Binding Buffer	10 ml	
D4060-1-140	Oligo Binding Buffer	40 ml	
D4061	Oligo Clean & Concentrator™	200 preps.	65
D4062	ZR-96 Oligo Clean & Concentrator™	2 x 96 preps.	65
D4063	ZR-96 Oligo Clean & Concentrator™	4 x 96 preps.	65
D4064	Genomic DNA Clean & Concentrator®-25	25 preps.	68
D4065	Genomic DNA Clean & Concentrator®-25	100 preps.	68
D4066	ZR-96 Genomic DNA Clean & Concentrator®-5	2 x 96 preps.	69
D4067	ZR-96 Genomic DNA Clean & Concentrator®-5	4 x 96 preps.	69
D4068	*Quick*-DNA™ Universal Kit	50 preps.	89
D4069	*Quick*-DNA™ Universal Kit	200 preps.	89
D4070	*Quick*-DNA™ Universal 96 Kit	2 x 96 preps.	89
D4071	*Quick*-DNA™ Universal 96 Kit	4 x 96 preps.	89
D4076	*Quick*-cfDNA™ Serum & Plasma Kit	50 preps.	91
D4076-A	*Quick*-cfDNA™ Serum & Plasma Buffer Set	Refill	91
D4080	*Select-a-Size*™ DNA Clean & Concentrator®	25 preps.	66
D4100	Zyppy®-96 Plasmid MagBead Miniprep	2 x 96 preps.	82
D4100-1-10	MagClearing Beads	10 ml	
D4100-1-20	MagClearing Beads	20 ml	
D4100-1-40	MagClearing Beads	40 ml	
D4100-2-6	MagBinding Beads	6 ml	181
D4100-2-8	MagBinding Beads	8 ml	181
D4100-2-12	MagBinding Beads	12 ml	181
D4100-2-16	MagBinding Beads	16 ml	181
D4100-2-24	MagBinding Beads	24 ml	181
D4101	Zyppy®-96 Plasmid MagBead Miniprep	4 x 96 preps.	82
D4102	Zyppy®-96 Plasmid MagBead Miniprep	8 x 96 preps.	82
D4200	ZymoPURE™ Plasmid Midiprep Kit	25 preps.	76
D4201	ZymoPURE™ Plasmid Midiprep Kit	50 preps.	76
D4202	ZymoPURE™ Plasmid Maxiprep Kit	10 preps.	77
D4203	ZymoPURE™ Plasmid Maxiprep Kit	20 preps.	77
D4204	ZymoPURE™ Plasmid Gigaprep Kit	5 preps.	78
D5001	EZ DNA Methylation™ Kit	50 rxns.	13
D5001-1	CT Conversion Reagent (10 conversions)	1 tube	
D5001-1-50	CT Conversion Reagent (5 x 10 conversions)	5 tubes	
D5001-2	M-Dilution Buffer	1.3 ml	
D5001-3	M-Binding Buffer	20 ml	
D5001-4	M-Wash Buffer	6 ml	
D5001-5	M-Desulphonation Buffer	10 ml	
D5001-6	M-Elution Buffer	1 ml	
D5002	EZ DNA Methylation™ Kit	200 rxns.	13
D5002-2	M-Dilution Buffer	5.2 ml	
D5002-3	M-Binding Buffer	80 ml	
D5002-4	M-Wash Buffer	24 ml	
D5002-5	M-Desulphonation Buffer	40 ml	
D5002-6	M-Elution Buffer	4 ml	
D5003	EZ-96 DNA Methylation™ Kit (shallow-well)	2 x 96 rxns.	13
D5003-1	CT Conversion Reagent (96 conversions)	1 bottle	
D5004	EZ-96 DNA Methylation™ Kit (deep-well)	2 x 96 rxns.	13
D5005	EZ DNA Methylation-Gold® Kit	50 rxns.	14
D5005-2	M-Dilution Buffer	1.5 ml	
D5005-3	M-Binding Buffer	30 ml	
D5005-6	M-Dissolving Buffer	500 µl	
D5006	EZ DNA Methylation-Gold® Kit	200 rxns.	14
D5006-2	M-Dilution Buffer	7 ml	
D5006-3	M-Binding Buffer	125 ml	
D5006-6	M-Dissolving Buffer	1.2 ml	
D5007	EZ-96 DNA Methylation-Gold® Kit (shallow-well)	2 x 96 rxns.	14
D5007-4	M-Wash Buffer	36 ml	
D5007-6	M-Elution Buffer	8 ml	
D5008	EZ-96 DNA Methylation-Gold® Kit (deep-well)	2 x 96 rxns.	14
D5011	Universal Methylated Human DNA Standard	1 set	23
D5012	Universal Methylated Mouse DNA Standard	1 set	23
D5013	Human WGA Methylated & Non-methylated DNA Set	1 set	22
D5013-1	Human WGA Non-methylated DNA	5 µg / 20 µl	
D5014	Human Methylated & Non-methylated DNA Set	1 set	22
D5014-1	Human HCT116 DKO Non-methylated DNA	5 µg / 20 µl	
D5014-2	Human HCT116 DKO Methylated DNA	5 µg / 20 µl	
D5015	Bisulfite-Converted Universal Methylated Human DNA Standard	1 set	23
D5016	*E. coli* Non-methylated Genomic DNA	5 µg / 20 µl	23
D5017	Methylated & Non-methylated pUC19 DNA Set	1 set	23
D5018	Human Matched DNA Set	1 set	34
D5018-1	Human Brain DNA	5 µg	
D5018-2	Human Spleen DNA	5 µg	
D5019	Mouse 5hmC & 5mC DNA Set	1 set	34
D5019-1	Mouse Brain DNA	5 µg	
D5019-2	Mouse Kidney DNA	5 µg	
D5019-3	Mouse Liver DNA	5 µg	
D5019-4	Mouse Thymus DNA	5 µg	
D5020	EZ DNA Methlyation-Direct™ Kit	50 rxns.	15
D5020-7	M-Solubilization Buffer	4.5 ml	
D5020-8	M-Reaction Buffer	1 ml	
D5020-9	M-Digestion Buffer (2X)	4 ml	
D5021	EZ DNA Methlyation-Direct™ Kit	200 rxns.	15
D5021-7	M-Solubilization Buffer	18 ml	
D5021-8	M-Reaction Buffer	4 ml	
D5021-9	M-Digestion Buffer (2X)	15 ml	
D5022	EZ-96 DNA Methylation-Direct™ Kit (shallow-well)	2 x 96 rxns.	15
D5023	EZ-96 DNA Methylation-Direct™ Kit (deep-well)	2 x 96 rxns.	15
D5024	EZ DNA Methylation -Startup™ Kit	50 rxns.	17
D5030	EZ DNA Methylation-Lightning® Kit	50 rxns.	16

Cat. No.	Description	Size	Page
D5030-1	Lightning Conversion Reagent	1.5 ml	
D5030-5	L-Desulphonation Buffer	10 ml	
D5031	EZ DNA Methlyation-Lightning® Kit	200 rxns.	16
D5031-5	L-Desulphonation Buffer	40 ml	
D5032	EZ-96 DNA Methylation-Lightning® Kit	2 x 96 rxns.	16
D5032-1	Lightning Conversion Reagent, 1 bottle	15 ml	
D5033	EZ-96 DNA Methylation-Lightning® Kit (deep-well)	2 x 96 rxns.	16
D5040	EZ-96 DNA Methylation™ MagPrep	4 x 96 rxns.	13
D5040-3	M-Binding Buffer	250 ml	
D5040-4	M-Wash Buffer	72 ml	
D5040-5	M-Desulphonation Buffer	80 ml	
D5041	EZ-96 DNA Methylation™ MagPrep	8 x 96 rxns.	13
D5041-6	M-Elution Buffer	40 ml	
D5042	EZ-96 DNA Methylation-Gold® MagPrep	4 x 96 rxns.	14
D5043	EZ-96 DNA Methylation-Gold® MagPrep	8 x 96 rxns.	14
D5044	EZ-96 DNA Methylation-Direct™ MagPrep	4 x 96 rxns.	15
D5045	EZ-96 DNA Methylation-Direct™ MagPrep	8 x 96 rxns.	15
D5046	EZ-96 DNA Methylation-Lightning® MagPrep	4 x 96 rxns.	16
D5046-5	L-Desulphonation Buffer	80 ml	
D5047	EZ-96 DNA Methylation-Lightning® MagPrep	8 x 96 rxns.	16
D5101	Methylated-DNA IP Kit	10 rxns.	26
D5101-2	Methylated/Non-methylated Control DNA & Primer Set	1 Set	
D5101-3-20	MIP Buffer	20 ml	
D5101-4-1	DNA Denaturing Buffer	1 ml	
D5101-5-6	IP DNA Binding Buffer	6 ml	
D5201	ChIP DNA Clean & Concentrator® (uncapped)	50 preps.	37
D5201-1-50	ChIP DNA Binding Buffer	50 ml	
D5201-1-100	ChIP DNA Binding Buffer	100 ml	
D5205	ChIP DNA Clean & Concentrator® (capped)	50 preps.	37
D5206	ZR-96 ChIP DNA Clean & Concentrator®	2 x 96 rxns.	37
D5207	ZR-96 ChIP DNA Clean & Concentrator®	4 x 96 preps.	37
D5209	Zymo-Spin™ ChIP Kit	10 preps.	36
D5210	Zymo-Spin™ ChIP Kit	25 preps.	36
D5210-1-30	Chromatin Shearing Buffer	30 ml	
D5210-2-30	Chromatin Dilution Buffer	30 ml	
D5210-3-30	Chromatin Wash Buffer I	30 ml	
D5210-4-30	Chromatin Wash Buffer II	30 ml	
D5210-5-30	Chromatin Wash Buffer III	30 ml	
D5210-6-10	5X Chromatin Elution Buffer	10 ml	
D5210-7-1	5M NaCl	1 ml	
D5220	EZ Nucleosomal DNA Prep Kit	20 preps.	35
D5220-1	Micrococcal Nuclease	10 U / 100 µl	35, 164
D5220-2	Nuclei Prep Buffer	50 ml	
D5220-3	MN Digestion Buffer	50 ml	
D5220-4	5X MN Stop Buffer	6 ml	
D5310	*OneStep*™ qMethyl™ Kit	1 x 96 well	27
D5310-1	2X Test Reaction PreMix	0.5 ml	
D5310-2	2X Reference Reaction PreMix	0.5 ml	
D5311	*OneStep*™ qMethyl™-Lite	1 x 96 well	27
D5311-1	2X Test Reaction-Lite PreMix	0.5 ml	
D5311-2	2X Reference Reaction-Lite PreMix	0.5 ml	

Cat. No.	Description	Size	Page
D5325	5-mC DNA ELISA Kit	1 x 96 rxns.	24
D5325-1-15	5-mC Coating Buffer	15 ml	
D5325-1-30	5-mC Coating Buffer	30 ml	
D5325-2-250	5-mC ELISA Buffer	250 ml	
D5325-3-15	Secondary Antibody	15 µl	
D5325-3-30	Secondary Antibody	30 µl	
D5325-5-1	Negative Control	50 µl	
D5325-5-2	Positive Control	50 µl	
D5326	5-mC DNA ELISA Kit	2 x 96 rxns.	24
D5405	5-Methylcytosine & 5-Hydroxymethylcytosine DNA Standard Set	1 set	34
D5405-1	Cytosine DNA Standard	2 µg	
D5405-2	5-Methylcytosine DNA Standard	2 µg	
D5405-3	5-Hydroxymethylcytosine DNA Standard	2 µg	
D5410	Quest 5-hmC Detection Kit™	25 preps.	30
D5411	Quest 5-hmC Detection Kit™	50 preps.	30
D5415	Quest 5-hmC Detection Kit™ -Lite	25 preps.	30
D5416	Quest 5-hmC Detection Kit™ -Lite	50 preps.	30
D5420	Quest 5-hmC™ DNA Enrichment Kit	25 rxns.	32
D5420-1-50	JBP Binding Buffer	50 ml	
D5420-2	5-hmC DNA Elution Buffer	1.5 ml	
D5420-3-250	JBP Capture MagBeads	250 µl	
D5420-3-500	JBP Capture MagBeads	500 µl	
D5420-4	Magnetic Rods	4 rods	
D5420-5	5-hmC Control DNA	25 µl	
D5420-6	Control Primers	20 µM	
D5421	Quest 5-hmC™ DNA Enrichment Kit	50 rxns.	32
D5425	Quest 5-hmC™ DNA ELISA Kit	1 x 96 rxns.	31
D5425-1-15	Coating Buffer	15 ml	
D5425-1-30	Coating Buffer	30 ml	
D5425-2-30	10X ELISA Buffer	30 ml	
D5425-2-60	10X ELISA Buffer	60 ml	
D5425-3-100	Anti-DNA HRP Antibody	100 µl	
D5425-3-200	Anti-DNA HRP Antibody	200 µl	
D5425-4-15	HRP Developer	15 ml	
D5425-4-30	HRP Developer	30 ml	
D5425-5-1	Control A	4 µg	
D5425-5-2	Control B	4 µg	
D5425-5-3	Control C	4 µg	
D5425-5-4	Control D	4 µg	
D5425-5-5	Control E	4 µg	
D5425-5-C	Control DNA Set	5 x 40 µl	
D5426	Quest 5-hmC™ DNA ELISA Kit	2 x 96 rxns.	31
D5450	RRHP 5-hmC Library Prep Kit	12 preps.	33
D5451	RRHP 5-hmC Library Prep Kit	25 preps.	33
D5455	Pico Methyl-Seq™ Library Prep Kit	10 preps.	28
D5456	Pico Methyl-Seq™ Library Prep Kit	25 preps.	28
D6001	ZR Soil Microbe DNA MiniPrep™	50 preps.	102
D6001-1-100	Soil DNA Binding Buffer	100 ml	
D6001-1-150	Soil DNA Binding Buffer	150 ml	
D6001-1-500	Soil DNA Binding Buffer	500 ml	
D6001-2-50	Soil DNA Wash Buffer	50 ml	

Cat. No.	Description	Size	Page
D6001-2-100	Soil DNA Wash Buffer	100 ml	
D6001-3-40	Lysis Solution	40 ml	
D6001-3-150	Lysis Solution	150 ml	
D6002	ZR-96 Soil Microbe DNA Kit™	2 x 96 preps.	102
D6003	ZR Soil Microbe DNA MicroPrep™	50 preps.	102
D6005	ZR Fungal/Bacterial DNA MiniPrep™	50 preps.	101
D6005-1-100	Fungal/Bacterial DNA Binding Buffer	100 ml	
D6005-1-150	Fungal/Bacterial DNA Binding Buffer	150 ml	
D6005-2-50	Fungal/Bacterial DNA Wash Buffer	50 ml	
D6005-2-100	Fungal/Bacterial DNA Wash Buffer	100 ml	
D6006	ZR-96 Fungal/Bacterial DNA Kit™	2 x 96 preps.	101
D6007	ZR Fungal/Bacterial DNA MicroPrep™	50 preps.	101
D6010	ZR Fecal DNA MiniPrep™	50 preps.	100
D6010-1-100	Fecal DNA Binding Buffer	100 ml	
D6010-1-150	Fecal DNA Binding Buffer	150 ml	
D6010-2-50	Fecal DNA Wash Buffer	50 ml	
D6010-2-100	Fecal DNA Wash Buffer	100 ml	
D6011	ZR-96 Fecal DNA Kit™	2 x 96 preps.	100
D6012	ZR Fecal DNA MicroPrep™	50 preps.	100
D6015	ZR Tissue & Insect DNA MicroPrep™	50 preps.	103
D6016	ZR Tissue & Insect DNA MiniPrep™	50 preps.	103
D6017	ZR-96 Tissue & Insect DNA Kit™	2 x 96 preps.	103
D6020	ZR Plant/Seed DNA MiniPrep™	50 preps.	104
D6020-1-100	Plant/Seed DNA Binding Buffer	100 ml	
D6020-1-150	Plant/Seed DNA Binding Buffer	150 ml	
D6020-2-50	Plant/Seed DNA Wash Buffer	50 ml	
D6020-2-100	Plant/Seed DNA Wash Buffer	100 ml	
D6021	ZR-96 Plant/Seed DNA Kit™	2 x 96 preps.	104
D6022	ZR Plant/Seed DNA MicroPrep™	50 preps.	104
D6030	*OneStep*™ PCR Inhibitor Removal Kit	50 preps.	71
D6035	*OneStep*™-96 PCR Inhibitor Removal Kit	2 x 96 preps.	71
D6035-1-30	Prep Solution	30 ml	
D6040	ZR DNA Card Extraction Kit	50 preps.	
D6101	ZR Soil Microbe DNA MidiPrep™	25 preps.	102
D6105	ZR Fungal/Bacterial DNA MidiPrep™	25 preps.	101
D6110	ZR Fecal DNA MidiPrep™	25 preps.	100
D6115	ZR Tissue & Insect DNA MidiPrep™	25 preps.	103
D6202	*Xpedition*™ Soil/Fecal DNA MiniPrep	50 preps.	105
D6202-1-40	*Xpedition*™ Lysis/Stabilization Solution	40 ml	105
D6202-2-100	Soil/Fecal DNA Binding Buffer	100 ml	
D6202-3-50	Soil/Fecal DNA Wash Buffer	50 ml	
D6206	*Xpedition*™ Fungal/Bacterial DNA MiniPrep	50 preps.	105
D6216	*Xpedition*™ Tissue & Insect DNA MiniPrep	50 preps.	105
D6221	*Xpedition*™ Plant/Seed DNA MiniPrep	50 preps.	105
D7001	ZR-*Duet*™ DNA/RNA MiniPrep	50 preps.	108
D7001-1-50	DNA/RNA Lysis Buffer	50 ml	
D7001-2-12	DNA Prep Buffer	12 ml	
D7001-2-25	DNA Prep Buffer	25 ml	
D7010	ssDNA/RNA Clean & Concentrator™	20 preps.	109
D7010-1-10	DNA/RNA Binding Buffer	10 ml	
D7010-1-25	DNA/RNA Binding Buffer	25 ml	
D7010-1-50	DNA/RNA Binding Buffer	50 ml	

Cat. No.	Description	Size	Page
D7010-2-10	DNA/RNA Prep Buffer	10 ml	
D7010-2-25	DNA/RNA Prep Buffer	25 ml	
D7010-3-6	DNA/RNA Wash Buffer (concentrate)	6 ml	
D7010-3-12	DNA/RNA Wash Buffer (concentrate)	12 ml	
D7010-3-24	DNA/RNA Wash Buffer (concentrate)	24 ml	
D7011	ssDNA/RNA Clean & Concentrator™	50 preps.	109
D7020	ZR Viral DNA/RNA Kit™	25 preps.	110
D7020-1-25	Viral DNA/RNA Buffer	25 ml	
D7020-1-100	Viral DNA/RNA Buffer	100 ml	
D7021	ZR Viral DNA/RNA Kit™	100 preps.	110
E1004	Zymolyase with Storage Buffer	1,000 U	152, 165
E1005	Zymolyase with Storage Buffer	2,000 U	152, 165
E1006	R-Zymolyase with Storage Buffer	1,000 U	152, 165
E1008-2	RNase A	2 mg	165
E1008-8	RNase A	8 mg	165
E1008-24	RNase A	24 mg	165
E1010	DNase I Set	250 U	162
E2001	Zymo*Taq*™ DNA Polymerase	50 rxns.	40, 165
E2002	Zymo*Taq*™ DNA Polymerase	200 rxns.	40, 165
E2003	Zymo*Taq*™ PreMix	50 rxns.	40, 165
E2004	Zymo*Taq*™ PreMix	200 rxns.	40, 165
E2005	Femto™ Human DNA Quantification Kit	100 rxns	112
E2006	Femto™ Bacterial DNA Quantification Kit	100 rxns	112
E2007	Femto™ Fungal DNA Quantification Kit	100 rxns	112
E2010	CpG Methylase (M. SssI)	200 U	38, 162
E2010-2	10X CpG Reaction Buffer	1 ml	
E2010-3	20X SAM (S-adenosylmethionine)	200 µl	
E2011	CpG Methylase (M. SssI)	400 U	38, 162
E2014	GpC Methylase (M. CviPI)	200 U	38, 163
E2014-2	10X GpC Reaction Buffer	1 ml	
E2015	GpC Methylase (M. CviPI)	1,000 U	38, 163
E2016	DNA Degradase™	500 U	42, 163
E2017	DNA Degradase™	2,000 U	42, 163
E2018-50	dsDNA Shearase™ Plus	50 U	43, 163
E2018-200	dsDNA Shearase™ Plus	200 U	43, 163
E2019-50	dsDNA Shearase™ Plus + DCC®-5	50 U + 50 preps.	43, 163
E2019-200	dsDNA Shearase™ Plus + DCC®-5	200 U + 200 preps.	43, 163
E2020	DNA Degradase Plus™	250 U	42, 163
E2021	DNA Degradase Plus™	1,000 U	42, 163
E2026	5-hmC Glucosyltransferase	100 U	39, 162
E2027	5-hmC Glucosyltransferase	200 U	39, 162
E2030	Atlantis dsDNase	12.5 U	162
E2030-1	Atlantis Digestion Buffer	50 ml	
E2050	Quest*Taq*™ PreMix	50 rxns.	41, 164
E2051	Quest*Taq*™ PreMix	200 rxns.	41, 164
E2052	Quest*Taq*™ qPCR PreMix	50 rxns.	41, 164
E2053	Quest*Taq*™ qPCR PreMix	200 rxns.	41, 164
E2054	Zymo*Taq*™ qPCR PreMix	50 rxns.	40

Cat. No.	Description	Size	Page
E2055	Zymo*Taq*™ qPCR PreMix	200 rxns.	40
F9001-1	5-Fluoroorotic Acid (powder)	1 g	156,169
F9001-5	5-Fluoroorotic Acid (powder)	5 g	156,169
F9003	100X 5-Fluoroorotic Acid (liquid)	10 ml	156,169
H1001	Squisher™-Single	10 pack	185
H1001-50	Squisher™-Single	50 pack	185
H1002-5	Squisher™-8 with 96-Well Block	5 pack & 1 block	185
H1002-20	Squisher™-8 with 96-Well Block	20 pack & 2 blocks	185
H1004-2	Squisher™-96 with 96-Well Block	2 pack & 2 blocks	185
H1004-5	Squisher™-96 with 96-Well Block	5 pack & 5 blocks	185
I1001-5	Isopropyl-β-D-thiogalactopyranoside (IPTG)	5 ml	169
I1001-25	Isopropyl-β-D-thiogalactopyranoside (IPTG)	5 x 5 ml	169
M2001	ZymoMag Protein A	200 µl	
M3011	Dual Media Set™ (100 ml EB & 500 ml OB)	1 Set	160
M3012-100	Expansion Broth (EB)	100 ml	160
M3012-500	Expansion Broth (EB)	500 ml	160
M3013-100	Overexpression Broth (OB)	100 ml	160
M3013-500	Overexpression Broth (OB)	500 ml	160
M3015-100	ZymoBroth™	100 ml	147
M3015-500	ZymoBroth™	5 x 100 ml	147
M5001-50	ZR 50 bp DNA Marker™	50 µg / 100 µl	111
M5001-200	ZR 50 bp DNA Marker™	200 µg / 400 µl	111
M5002-50	ZR 100 bp DNA Marker™	50 µg / 100 µl	111
M5002-200	ZR 100 bp DNA Marker™	200 µg / 400 µl	111
M5003-50	ZR 1 kb DNA Marker™	50 µg / 100 µl	111
M5003-200	ZR 1 kb DNA Marker™	200 µg / 400 µl	111
M5004-50	ZR 50 bp DNA Marker™ (ready-to-load)	50 µg / 600 µl	111
M5005-50	ZR 100 bp DNA Marker™ (ready-to-load)	50 µg / 600 µl	111
M5006-50	ZR 1 kb DNA Marker™ (ready-to-load)	50 µg / 600 µl	111
P1001-2	96-Well Block	2 blocks	183
P1001-10	96-Well Block	10 blocks	183
P1002-2	96-Well Block with Cover Foil	2 blocks/foils	183
P1003-1	96-Well Mixing Block	1 block	
P1005	ZR-96 MagStand	1 stand	
P2001	His-Spin Protein Miniprep™	10 preps.	161
P2002	His-Spin Protein Miniprep™	50 preps.	161
P2003-1	Zymo-Spin™ PI Columns	50 pack	175
P2003-2	His-Affinity Gel	14 ml	155, 169
P2003-3	His-Binding Buffer	50 ml	
P2003-4	His-Wash Buffer	50 ml	
P2003-5	His-Elution Buffer	25 ml	
R1001-1	YR Digestion Buffer	3.2 ml	
R1001-2	YR Lysis Buffer	6.4 ml	
R1002	YeaStar™ RNA Kit	40 preps.	134
R1003	Pinpoint® Slide RNA Isolation System I	50 preps.	133
R1003-2-3	RNA Extraction Buffer	3 ml	
R1003-2-12	RNA Extraction Buffer	12 ml	

Cat. No.	Description	Size	Page
R1003-2-50	RNA Extraction Buffer	50 ml	
R1003-2-100	RNA Extraction Buffer	100 ml	
R1003-3-6	RNA Wash Buffer	6 ml	
R1003-3-12	RNA Wash Buffer	12 ml	
R1003-3-24	RNA Wash Buffer	24 ml	
R1003-3-48	RNA Wash Buffer	48 ml	
R1007	Pinpoint® Slide RNA Isolation System II	50 preps.	133
R1007-1	RNA Digestion Buffer	1.2 ml	
R1011	Zymoclean™ Gel RNA Recovery Kit	50 preps.	121
R1011-1-50	RAD Buffer (RNA Agarose Dissolving Buffer)	50 ml	
R1013	RNA Clean & Concentrator™-5 w/ DNase I	50 preps.	120
R1013-2-25	RNA Binding Buffer	25 ml	
R1013-2-50	RNA Binding Buffer	50 ml	
R1013-2-100	RNA Binding Buffer	100 ml	
R1013-2-1000	RNA Binding Buffer	1000 ml	
R1014	RNA Clean & Concentrator™-5 w/ DNase I	200 preps.	120
R1015	RNA Clean & Concentrator™-5	50 preps.	120
R1016	RNA Clean & Concentrator™-5	200 preps.	120
R1017	RNA Clean & Concentrator™-25	50 preps.	120
R1018	RNA Clean & Concentrator™-25	100 preps.	120
R1019	RNA Clean & Concentrator™-100	25 preps.	120
R1020	ZR Whole-Blood RNA MiniPrep™	50 preps.	
R1020-1-50	ZR RNA Buffer	50 ml	
R1020-1-100	ZR RNA Buffer	100 ml	
R1020-1-200	ZR RNA Buffer	200 ml	
R1020-2-12	RNA Pre-wash Buffer	12 ml	
R1020-2-25	RNA Pre-wash Buffer	25 ml	
R1020-2-50	RNA Pre-wash Buffer	50 ml	
R1020-2-100	RNA Pre-wash Buffer	100 ml	
R1021	ZR Whole-Blood RNA MiniPrep™	100 preps.	
R1022	ZR-96 Whole-Blood RNA™	2 x 96 preps.	
R1022-1-50	Blood RNA Buffer	50 ml	
R1022-1-100	Blood RNA Buffer	100 ml	
R1022-2-50	RBC Lysis Buffer	50 ml	
R1022-2-100	RBC Lysis Buffer	100 ml	
R1034	ZR Viral RNA Kit™	50 preps.	131
R1034-1-50	Viral RNA Buffer	50 ml	
R1034-1-100	Viral RNA Buffer	100 ml	
R1034-2-6	Viral RNA Wash Buffer (concentrate)	6 ml	
R1034-2-24	Viral RNA Wash Buffer (concentrate)	24 ml	
R1034-2-48	Viral RNA Wash Buffer (concentrate)	48 ml	
R1035	ZR Viral RNA Kit™	200 preps.	131
R1038	ZR Urine RNA Isolation Kit™	20 preps.	132
R1038-1-20	RNA Extraction Buffer Plus	20 ml	
R1038-1-50	RNA Extraction Buffer Plus	50 ml	
R1039	ZR Urine RNA Isolation Kit™	50 preps.	132
R1040	ZR-96 Viral RNA Kit™	2 x 96 preps.	131
R1041	ZR-96 Viral RNA Kit™	4 x 96 preps.	131
R1050	*Quick*-RNA™ MicroPrep	50 preps.	129
R1051	*Quick*-RNA™ MicroPrep	200 preps.	129
R1052	ZR-96 *Quick*-RNA™	2 x 96 preps.	129

Cat. No.	Description	Size	Page
R1053	ZR-96 *Quick*-RNA™	4 x 96 preps.	129
R1054	*Quick*-RNA™ MiniPrep	50 preps.	129
R1055	*Quick*-RNA™ MiniPrep	200 preps.	129
R1056	*Quick*-RNA™ MidiPrep	25 preps.	129
R1057	*Quick*-RNA™ MiniPrep Plus	50 preps.	130
R1058	*Quick*-RNA™ MiniPrep Plus	200 preps.	130
R1060	ZR RNA MicroPrep™ Kit	50 preps.	
R1060-1-50	RNA Lysis Buffer	50 ml	
R1060-1-100	RNA Lysis Buffer	100 ml	
R1060-2-10	RNA Prep Buffer	10 ml	
R1060-2-25	RNA Prep Buffer	25 ml	
R1061	ZR RNA MicroPrep™	200 preps.	
R1064	ZR RNA MiniPrep™	50 preps.	
R1065	ZR RNA MiniPrep™	200 preps.	
R1070	ZR small-RNA™ PAGE Recovery Kit	20 preps.	122
R1070-1-10	RNA Recovery Buffer	10 ml	
R1070-2-20	RNA MAX Buffer	20 ml	
R1080	ZR-96 RNA Clean & Concentrator™	2 x 96 preps.	120
R1090	ZR small-RNA™ Ladder	10 µg	123
R1100-50	DNA/RNA Shield™	50 ml	139
R1100-250	DNA/RNA Shield™	250 ml	139
R1200-25	DNA/RNA Shield™ (2X concentrate)	25 ml	139
R1200-125	DNA/RNA Shield™ (2X concentrate)	125 ml	139
R2010	ZR Fungal/Bacterial RNA MicroPrep™	50 preps.	137
R2014	ZR Fungal/Bacterial RNA MiniPrep™	50 preps.	137
R2024	ZR Plant RNA MiniPrep™	50 preps.	138
R2030	ZR Tissue & Insect RNA MicroPrep™	50 preps.	138
R2040	ZR Soil/Fecal RNA MicroPrep™	50 preps.	137
R2040-1-50	S/F RNA Lysis Buffer	50 ml	
R2050	Direct-zol™ RNA MiniPrep	50 preps.	126
R2050-1-50	TRI Reagent®	50 ml	
R2050-1-200	TRI Reagent®	200 ml	
R2050-2-40	Direct-zol™ RNA PreWash (concentrate)	40 ml	
R2050-2-160	Direct-zol™ RNA PreWash (concentrate)	160 ml	
R2051	Direct-zol™ RNA MiniPrep + TRI Reagent®	50 preps.	126
R2052	Direct-zol™ RNA MiniPrep	200 preps.	126
R2053	Direct-zol™ RNA MiniPrep + TRI Reagent®	200 preps.	126
R2054	Direct-zol™-96 RNA	2 x 96 preps.	126
R2055	Direct-zol™-96 RNA + TRI Reagent®	2 x 96 preps.	126
R2056	Direct-zol™-96 RNA	4 x 96 preps.	126
R2057	Direct-zol™-96 RNA + TRI Reagent®	4 x 96 preps.	126
R2060	Direct-zol™ RNA MicroPrep	50 preps.	126
R2061	Direct-zol™ RNA MicroPrep + TRI Reagent®	50 preps.	126
R2062	Direct-zol™ RNA MicroPrep	200 preps.	126
R2063	Direct-zol™ RNA MicroPrep + TRI Reagent®	200 preps.	126
R2070	Direct-zol™ RNA MiniPrep Plus	50 preps.	126
R2071	Direct-zol™ RNA MiniPrep Plus + TRI Reagent®	200 preps.	126
R2072	Direct-zol™ RNA MiniPrep Plus	50 preps.	126
R2073	Direct-zol™ RNA MiniPrep Plus + TRI Reagent®	200 preps.	126
R2100	Direct-zol™-96 MagBead RNA	2 x 96 preps.	127
R2100-1-5	Direct-zol™ Binding Buffer	5 ml	
R2100-1-10	Direct-zol™ Binding Buffer	10 ml	

Cat. No.	Description	Size	Page
R2100-1-20	Direct-zol™ Binding Buffer	20 ml	
R2100-2-200	Direct-zol™ MagBead PreWash	200 ml	
R2101	Direct-zol™-96 MagBead RNA + TRI Reagent®	2 x 96 preps.	127
R2102	Direct-zol™-96 MagBead RNA	4 x 96 preps.	127
R2103	Direct-zol™-96 MagBead RNA + TRI Reagent®	4 x 96 preps.	127
R2104	Direct-zol™-96 MagBead RNA	8 x 96 preps.	127
R2105	Direct-zol™-96 MagBead RNA + TRI Reagent®	8 x 96 preps.	127
R5001	EZ RNA Methylation™ Kit	50 preps.	18
R5001-1-1	RNA Conversion Reagent	1.5 ml	
R5001-3-10	RNA Desulphonation Buffer	10 ml	
R5001-3-40	RNA Desulphonation Buffer	40 ml	
R5002	EZ RNA Methylation™ Kit	200 preps.	18
S1001	Rattler™ Plating Beads, 230 g	1 bottle	148, 186
S1001-5	Rattler™ Plating Beads, 230 g	5 bottles	148, 186
S1001-B	Rattler™ Plating Beads - bulk format (non-sterile)	25 kg bag	148, 186
S5001	Vortex-Genie® 2 (120V)	1 unit	186
S5001-1	Microtube Foam Inserts	2 units	186
S5001-2	Microplate Foam Inserts	2 units	186
S5001-3	29-37 mm Tube Foam Inserts	2 units	186
S5001-4	Pop-off Cup	1 unit	186
S5001-5	Horizontal 50 ml Tube Holder	1 unit	187
S5001-6	Horizontal 15 ml Tube Holder	1 unit	187
S5001-7	Horizontal Microtube Holder	1 unit	187
S5002	Vortex-Genie® 2 (230V, Euro plug)	1 unit	186
S5003	Digital Vortex-Genie® 2 (120V)	1 unit	186
S5004	Digital Vortex-Genie® 2 (230V, Euro plug)	1 unit	186
S5005	MicroPlate Genie® (120V)	1 unit	187
S5006	MicroPlate Genie® (230V, Euro plug)	1 unit	187
S5007	Roto-Shake Genie® (120V)	1 unit	187
S5008	Roto-Shake Genie® (230V, Euro plug)	1 unit	187
S5009	MagStir Genie® (120V)	1 unit	187
S5010	MagStir Genie® (230V, Euro plug)	1 unit	187
S6001-2-120	Disruptor Genie® (120V)	1 unit	184
S6001-2-230	Disruptor Genie® (230V, Euro plug)	1 unit	184
S6002-50	ZR BashingBead™ Lysis Tubes (0.5 mm)	50 tubes	181
S6002-96-1	ZR-96 BashingBead™ Lysis Rack (0.5 mm)	1 rack	183
S6002-96-2	ZR-96 BashingBead™ Lysis Rack (2 mm)	1 rack	183
S6003-50	ZR BashingBead™ Lysis Tubes (2 mm)	50 tubes	181
S6004	TurboMix Attachment	1 unit	
S6004-3	Disruptor Genie® with Australian Plug (240V)	1 unit	
S6004-4	Multiple Sample Starter Set (Model H301)	1 unit	
S6005	FastPrep®-24	1 unit	184
S6005-1	HiPrep™ Adapter (48 x 2 ml tubes)	1 unit	184
S6005-2	CoolPrep™ Adapter (24 x 2 ml tubes)	1 unit	184
S6005-3	TeenPrep™ Adapter (12 x 15 ml tubes)	1 unit	184
S6005-4	BigPrep™ Adapter (2 x 50 ml tubes)	1 unit	184
S6005-5	FastPrep® European AC Cord	1 unit	184
S6005-6	QuickPrep™ Adapter	1 unit	
S6006	2010 Geno/Grinder®	1 unit	185
S6006-1	2 ml Tube Holder/Cryo Block Assembly	2 blocks	185

Cat. No.	Description	Size	Page
S6006-2	15 ml Tube Holder/Cryo Block Assembly	2 blocks	185
S6006-3	50 ml Tube Holder/Cryo Block Assembly	2 blocks	185
S6006-10	Large Capacity Clamp Assembly	1 unit	185
S6007-1	BBX24 Bullet Blender™	1 unit	184
S6007-2	BBX24B Bullet Blender™ Blue with Cooling Fan	1 unit	184
S6007-3	BB 50DX Bullet Blender™ 50DX with Cooling Fan	1 unit	184
S6008	FastPrep®-96	1 unit	
S6010	ZR BashingBead™ Lysis/Filtration Tubes with 0.5 mm Beads (50 ml)	25 pack	
S6011	ZR BashingBead™ Lysis/Filtration Tubes with 2.0 mm Beads (50 ml)	25 pack	
S6022	TerraLyzer™	1 unit	184
S6020-1	DieHard Lithium-Ion Battery	1 unit	
S6020-2	DieHard Lithium-Ion Battery Charging Station	1 unit	
S6020-3	Power Adapter and Converter	1 unit	
S7000	EZ-Vac™ Vacuum Manifold	1 manifold	
T2001	Frozen-EZ Yeast Transformation II™ Kit	120 rxns.	154
T2002	Frozen-EZ Solution 1	60 ml	
T2003	Frozen-EZ Solution 2	6 ml	
T2004	Frozen-EZ Solution 3	60 ml	
T3001	*Mix & Go E. coli* Transformation Kit	up to 20 ml	146
T3001-2-10	*Mix & Go* 2X Stock Wash Buffer	10 ml	
T3001-2-30	*Mix & Go* 2X Stock Wash Buffer	30 ml	
T3001-3-10	*Mix & Go* 2X Stock Competent Buffer	10 ml	
T3001-3-30	*Mix & Go* 2X Stock Competent Buffer	30 ml	
T3001-4-20	*Mix & Go* Dilution Buffer	20 ml	
T3001-4-60	*Mix & Go* Dilution Buffer	60 ml	
T3002	*Mix & Go E. coli* Transformation Buffer Set	up to 60 ml	146
T3003	*Mix & Go* Competent Cells - Strain JM109	10 x 100 µl	144
T3005	*Mix & Go* Competent Cells - Strain JM109	96 x 50 µl	144
T3007	*Mix & Go* Competent Cells - Zymo 5a	10 x 100 µl	144
T3009	*Mix & Go* Competent Cells - Zymo 5a	96 x 50 µl	144
T3010	*Mix & Go* Competent Cells - Zymo 5a w/ 96-well PCR plates and Cover Foils	96 x 50 µl	144
T3011	*Mix & Go* Competent Cells - HB101	10 x 100 µl	144
T3013	*Mix & Go* Competent Cells - HB101	96 x 50 µl	144
T3015	*Mix & Go* Competent Cells - C600	10 x 100 µl	144
T3017	*Mix & Go* Competent Cells - TG1	10 x 100 µl	144
T3019	*Mix & Go* Competent Cells - Zymo 10B	10 x 100 µl	144
T3020	*Mix & Go* Competent Cells - Zymo 10B	96 x 50 µl	144
T3021	*Mix & Go* Competent Cells - XJa Autolysis™	10 x 100 µl	145
T3031	*Mix & Go* Competent Cells - XJa(DE3) Autolysis™	10 x 100 µl	145
T3041	*Mix & Go* Competent Cells - XJb Autolysis™	10 x 100 µl	145
T3051	*Mix & Go* Competent Cells - XJb(DE3) Autolysis™	10 x 100 µl	145
T5021	XJa Autolysis™, Glycerol Stock	1 tube	145
T5031	XJa(DE3) Autolysis™, Glycerol Stock	1 tube	145
T5041	XJb Autolysis™, Glycerol Stock	1 tube	145
T5051	XJb(DE3) Autolysis™, Glycerol Stock	1 tube	145
W1001-1	DNase/RNase-free Water	1 ml	
W1001-4	DNase/RNase-free Water	4 ml	
W1001-6	DNase/RNase-free Water	6 ml	
W1001-10	DNase/RNase-free Water	10 ml	
W1001-30	DNase/RNase-free Water	30 ml	
X1001-5	5-bromo-4-chloro-3-indolyl β-D-galactopyranoside (X-GAL)	5 ml	169
X1001-25	5-bromo-4-chloro-3-indolyl β-D-galactopyranoside (X-GAL)	5 x 5 ml	169
Y1001	α-Factor Mating Pheromone	240 µl	155
Y1002	Yeast Protein Kit™	200 preps.	157
Y1002-1-100	Y-Lysis Buffer	100 ml	
Y1002-1-6	Y-Lysis Buffer	6 ml	
Y1003-50	YPD Plus™	50 ml	153
Y1003-100	YPD Plus™	2 x 50 ml	153
Y1004-500	a-Factor Mating Pheromone	240 µl	155

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The Beauty of Science is to Make Things Simple

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