ZYMO RESEARCH

The Beauty of Science is to Make Things Simple

INSTRUCTION MANUAL

DNA Clean & Concentrator™-100

Catalog Nos. **D4029 & D4030**

Highlights

- Simple, quick recovery of ultra-pure DNA from PCR, enzymatic reactions, and other sources.
- Column design allows DNA to be eluted at high concentrations into minimal volumes of water or elution buffer using a microcentrifuge.
- Eluted DNA is ideal for PCR, DNA sequencing, DNA transfection, DNA ligation, endonuclease digestion, RNA transcription, radiolabeling, etc.

Contents

ZYMO RESEARCH CORP.

Phone: (949) 679-1190 ▪ Toll Free: (888) 882-9682 ▪ Fax: (949) 266-9452 ▪ info@zymoresearch.com ▪ www.zymoresearch.com

Satisfaction of all Zymo Research products is guaranteed. If you should be dissatisfied with this product please call 1-888-882-9682.

Product Contents

DNA Clean & Concentrator™-100 (Kit Size)	**D4029** (25 Preps.)	**D4030** (50 Preps.)	**Storage Temperature**
DNA Binding Buffer	100 ml	2 x 100 ml	Room Temp.
DNA Wash Buffer[1]	24 ml	48 ml	Room Temp.
DNA Elution Buffer	10 ml	10 ml	Room Temp.
Zymo-Spin™ V Column with Reservoir	25	50	Room Temp.
Collection Tubes	25	50	Room Temp.
Instruction Manual	1	1	-

Integrity of kit components is guaranteed for up to one year from date of purchase. Reagents are routinely tested on a lot-to-lot basis to ensure they provide the highest performance and reliability.

[1] Ethanol must be added prior to use as indicated on the **DNA Wash Buffer** label.

Specifications

- **DNA Purity** – High-quality DNA (A_{260}/A_{280} >1.8) ideal for ligation, sequencing, labeling, PCR, microarray, transfection, transformation, and restriction digestion procedures.
- **DNA Size Limits** – From ~50 bp to 23 kb.
- **DNA Recovery** – Typically, ≤ 100 µg total DNA can be eluted with ≥ 150 µl of low salt **DNA Elution Buffer** or water. For DNA 50 bp to 10 kb, the recovery is 70-90%. For DNA 11 kb to 23 kb, the recovery is 50-70%.
- **Sample Sources** – DNA from enzymatic reactions (e.g., PCR, restriction endonuclease digestions), plasmid preparations, and impure preparations.
- **Product Detergent Tolerance** – ≤ 5% Triton X-100, ≤ 5% Tween-20, ≤ 5% Sarkosyl, ≤ 0.1% SDS.
- **Equipment Needed** – Microcentrifuge and centrifuge or vacuum source.

Product Description

The **DNA Clean & Concentrator™-100** (**DCC™-100**) is designed for the rapid purification and concentration of up to 100 µg of high quality DNA from PCR, large format restriction endonuclease digestions, and other impure DNA preparations. The **DCC™-100** employs a single-buffer system that allows for efficient DNA adsorption onto the matrix of the supplied **Zymo-Spin™ V columns**. Simply add the specially formulated **DNA Binding Buffer** to your sample and transfer the mixture to the supplied **Zymo-Spin™ V Column with Reservoir**. There is no need for organic denaturants or chloroform. The purified DNA is ideal for DNA ligation, sequencing, labeling, PCR, microarray, transfection, transformation, and restriction digestion procedures.

The entire DNA purification/concentration procedure typically takes less than 20 minutes and can be performed using a centrifuge or vacuum source together with a microcentrifuge.

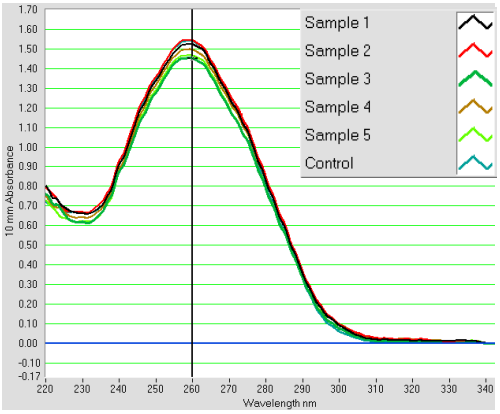
For DNA samples <5 µg, use the **DNA Clean & Concentrator-5™ (D4003, D4004, D4013 & D4014)**.

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

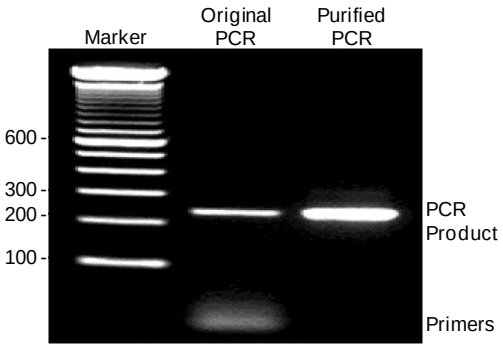
Zymo-Spin ™ Column /Reservoir assembly inside a 50 ml tube.

Zymo-Spin™ V Column placed inside a **Collection Tube.**

Zymo-Spin ™ Column /Reservoir assembly connected to a vacuum manifold.



Pure and Reliable Recovery with the DCC™-100. Shown here is the recovery of 10 µg of sonicated salmon sperm DNA eluted into 150 µl of water analyzed on a NanoDrop® spectrophotometer. The DCC™ consistently yields >90% recovery in this example.



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

Available Formats

	DCC™-5	DCC™-25	DCC™-100	DCC™-500	Genomic DCC™	ZR-96 DCC™-5
						
Name	Zymo-Spin™ I & IC	Zymo-Spin™ II & IIC	Zymo-Spin™ V	Zymo-Spin™ VI	Zymo-Spin ™ IC-XL	Zymo-Spin™ I-96
Capacity	5 µg/ prep.	25 µg/ prep.	100 µg/ prep.	500 µg/ prep.	10 µg/ prep.	5 µg/ prep.
Elution Vol.	≥ 6 µl	≥ 25 µl	≥ 150 µl	≥ 2 ml	≥ 10 µl	≥ 10 µl
Cat. Nos.	D4003, D4013	D4005, D4033	D4029, D4030	D4031, D4032	D4010, D4011	D4023, D4024

Typical DCC™ Applications

Post-PCR DNA Clean-up	Efficient desalting of DNA with the removal of DNA polymerases, primers and free dNTPs.
DNA Clean-up From Enzymatic Reactions	Efficient desalting of DNA with the removal of modifying enzymes, RNA polymerases, ligases, kinases, nucleases, phosphatases, endonucleases, *etc.*
Post-Reverse Transcription (RT) & cDNA Clean-up	Efficiently purifies DNA following RT, either as a DNA/RNA complex or as single stranded cDNA following chemical hydrolysis of the RNA template.
Plasmid DNA Clean-up	Efficiently purifies plasmid DNA from "home-made" preparations of cell free lysates or from commercial kits. Plasmid DNA purified and concentrated using the **DCC™** has proven an excellent substrate for high quality DNA sequencing.
Isotope and Dye Removal	Efficiently removes unincorporated fluorescent (*i.e.*, AMCA, FITC, BIO, DIG, Cy3, Cy5, FAM, *etc.*) and radiolabeled dNTP derivatives from DNA following *in vitro* labeling reactions.
Purification of M13 ssDNA	The **DCC™** can be used for the rapid isolation of single stranded M13 phage DNA directly from phage-infected *E. coli* culture supernatant.

- ✓ For purification of short DNA or RNA oligonucleotides ≥16 nt, use the **Oligo Clean & Concentrator (D4060, D4061)**.
- ✓ For ChIP (Chromatin Immunoprecipitation) sample cleanup, use **the ChIP DNA Clean & Concentrator (D5201, D5205)** for high quality DNA from any step in a standard ChIP protocol.
- ✓ For post-cycle sequencing samples, use the **ZR Sequencing DNA Clean-up Kit (D4050, D4051)** for dye blob elimination.
- ✓ For samples containing PCR inhibitors, use the ***OneStep*™ PCR Inhibitor Removal Kit (D6030, D6035)**.

Selected Citations

Li, N (2010) Whole genome DNA methylation analysis based on high throughput sequencing technology. *Methods, 52* (3), 221-232.

Khoo, S (2011) Acquiring genome-wide gene expression profiles in Guthrie card blood spots using microarrays. *Pathology*,*61* (1), 1-6.

Lee, EJ (2011) Targeted bisulfite sequencing by solution selection and massively parallel sequencing. *Nucleic Acids Research, 39*(19), e127, doi:10.1093/nar/gkr598

Papageorgiou, EA. (2009) Sites of differential DNA methylation between placenta and peripheral blood. *Am J Pathol, 174* (5), 1609-1618.

Ferguson, AA et al. (2009) Retrofitting ampicillin resistant vectors by recombination for use in generating *C. elegans* transgenic animals by bombardment. *Plasmid, 62*, 140-145.

Buffer Preparation

✓ *Before starting:* Add 96 ml 100% ethanol (104 ml 95% ethanol) to the 24 ml **DNA Wash Buffer** concentrate. Add 192 ml 100% ethanol (208 ml 95% ethanol) to the 48 ml **DNA Wash Buffer** concentrate.

PROTOCOL

Add 2-7 volumes of **DNA Binding Buffer** to each volume of DNA sample (see table below). Mix briefly by gently inverting the tube.

Application	DNA Binding Buffer : Sample	Example
Plasmid, genomic DNA (>2 kb)	2 : 1	200 µl : 100 µl
PCR product, DNA fragment	5 : 1	500 µl : 100 µl
ssDNA (*e.g.* cDNA, M13 phage[1])	7 : 1	700 µl : 100 µl

Use any of the following three procedures to process samples.

Microcentrifuge Protocol (for sample/**DNA Binding Buffer** mixtures ≤ 600 µl)

1. Remove **Reservoir** from **Zymo-Spin™ V Column** and transfer the sample mixture to the **Zymo-Spin™ V Column** placed inside a **Collection Tube.**
2. Centrifuge at maximum speed (≥10,000 x *g*) for 1 minute. Discard the flow-through.
3. Add 600 µl **DNA Wash Buffer** to the **Zymo-Spin™ V Column**. Centrifuge at maximum speed for 1 minute. Discard the flow-through and repeat wash step.
4. Discard flow through. Place **Zymo-Spin™ V Column** into a **Collection Tube** and centrifuge at maximum speed for 30 seconds to remove any residual wash buffer.
5. Transfer the **Zymo-Spin™ V Column** into a new 1.5 ml microcentrifuge tube. Add 150 µl **DNA Elution Buffer**[3] or water[4] directly to the column matrix in the **Zymo-Spin™ V Column**. Wait for one minute to ensure that the column matrix has been fully hydrated prior to centrifugation at maximum speed for 1 minute to elute DNA.

   Ultra-pure, concentrated DNA is now ready for use.

Vacuum Protocol

1. Connect the **Zymo-Spin ™ V Column/Reservoir assembly** to a suitable vacuum manifold (see illustration on page 2). Pour the sample mixture into the **Reservoir**[2]. Turn on the vacuum source until the entire mixture has passed through the **Zymo-Spin™ V Column**.

   Note: *Ensure the connection between the* ***Zymo-Spin ™ V Column*** *and* ***Reservoir*** *is finger-tight prior to use.*
2. Add 2 ml **DNA Wash Buffer** to the **Reservoir** attached to a **Zymo-Spin™ V Column**. Turn on the vacuum source until all of the mixture has passed through the **Zymo Spin™ V Column**. Repeat wash step. After washing, leave the vacuum source "on" for an additional 5 minutes. Alternatively, transfer the **Zymo-Spin™ V Column** to a **Collection Tube** and, using a microcentrifuge, centrifuge at maximum speed (≥10,000 x *g*) for 30 seconds to remove any residual wash buffer.
3. Transfer the **Zymo-Spin™ V Column** into a new 1.5 ml microcentrifuge tube. Add 150 µl **DNA Elution Buffer**[3] or water[4] directly to the column matrix in the **Zymo-Spin™ V Column**. Wait for one minute to ensure that the column matrix has been fully hydrated prior to centrifugation at maximum speed for 1 minute to elute DNA.

   Ultra-pure, concentrated DNA is now ready for use.

For **Assistance**, please contact Zymo Research Technical Support at 1-888-882-9682 or e-mail tech@zymoresearch.com.

Notes:

[1] Centrifuge phage-infected bacterial culture at 8,000 x *g* for 1 minute prior to mixing an aliquot of the phage-containing supernatant with the **DNA Binding Buffer**

[2] The maximum capacity of the **Reservoir** is 15 ml. If the total volume of sample and buffer is greater, load the column repeatedly.

[3] **DNA Elution Buffer**: 10 mM Tris-HCl, pH 8.5, 0.1 mM EDTA

[4] Elution of DNA from the column is dependent on pH and temperature. If water is used, make sure the pH is >6.0. Waiting an additional minute prior to elution may improve the yield of larger (> 6 kb) DNA. For even larger DNA (> 10 kb), the total yield may be improved by eluting the DNA with 60-70 °C **DNA Elution Buffer**.

PROTOCOL

Centrifuge Protocol

1. Transfer the sample mixture to the **Zymo-Spin ™ V Column/Reservoir assembly**[1] inside a 50 ml conical tube**.**

   Note: *Ensure the connection between the* ***Zymo-Spin ™ V Column*** *and* ***Reservoir*** *is finger-tight prior to use.*

2. Centrifuge at 500 x *g* for 5 minutes. Discard flow-through.

3. Add 2 ml **DNA Wash Buffer** to the **Reservoir**. Centrifuge at 500 x *g* for 5 minutes. Discard flow-through. Repeat wash step.

4. Transfer the **Zymo-Spin™ V Column** to a **Collection Tube** and, using a microcentrifuge, centrifuge at maximum speed (≥10,000 x *g*) for 30 seconds to remove any residual wash buffer.

5. Transfer the **Zymo-Spin™ V Column** into a new 1.5 ml microcentrifuge tube. Add 150 µl **DNA Elution Buffer**[2] or water[3] directly to the column matrix in the **Zymo-Spin™ V Column**. Wait for one minute to ensure that the column matrix has been fully hydrated prior to centrifugation at maximum speed for 1 minute to elute DNA.

   Ultra-pure, concentrated DNA is now ready for use.

Notes:

[1] The maximum capacity of the **Reservoir** is 15 ml. If the total volume of sample and buffer is greater, load the column repeatedly.

[2] **DNA Elution Buffer**: 10 mM Tris-HCl, pH 8.5, 0.1 mM EDTA

[3] Elution of DNA from the column is dependent on pH and temperature. If water is used, make sure the pH is >6.0. Waiting an additional minute prior to elution may improve the yield of larger (> 6 kb) DNA. For even larger DNA (> 10 kb), the total yield may be improved by eluting the DNA with 60-70 °C **DNA Elution Buffer**.

Troubleshooting

Low Recovery

- **Improperly Prepared/Stored DNA Wash Buffer**
  Make sure ethanol has been added to the **DNA Wash Buffer** concentrate. Cap the bottle tightly to prevent evaporation over time.
- **Addition of DNA Elution Buffer**
  Add elution buffer directly to the column matrix and not to the walls of the column. Elution buffer requires contact with the matrix for at least 1 minute for large DNA ≥ 10 kb.
- **Incomplete Elution**
  1. DNA elution is dependent onpH, temperature, and time. For large genomic DNA (≥ 50 kb), apply heated elution buffer (60-70 °C) and incubate for several minutes prior to elution.
  2. Sequential elutions may be performed for quantitatively higher recovery but lower final DNA concentration. This is recommended for DNA ≥ 10 kb.

Low A_{260}/A_{230} Ratios

- **Column Tip Contaminated**
  When removing the column from the collection tube, be careful that the tip of the column does not come into contact with the flowthrough. Trace amounts of salt from the flowthrough can contaminate a sample resulting in low A_{260}/A_{230} ratios. Ethanol contamination from the flowthrough can also interfere with DNA elution. Zymo-Spin™ columns are designed for complete elution with no buffer retention or carryover.

Following Clean-up with the DCC™, Multiple Bands Appear in an Agarose Gel

- **Acidification of DNA Loading Dye**
  Most loading dyes do not contain EDTA and will acidify (pH ≤ 4) over time due to some microbial growth. This low pH is enough to cause DNA degradation. Therefore, if water is used to elute the DNA, 6X Loading Dye containing 1 mM EDTA is recommended.

Ordering Information

Product Description	Catalog No.	Kit Size (Preps.)
DNA Clean & Concentrator™-5 (for purification of up to 5 µg DNA per prep.) *Supplied with **uncapped columns***	D4003 D4004	50 200
DNA Clean & Concentrator™-5 (for purification of up to 5 µg DNA per prep.) *Supplied with **capped columns***	D4013 D4014	50 200
ZR-96 DNA Clean & Concentrator™-5 (for 96-well purification of up to 5 µg DNA per well)	D4023 D4024	2 x 96 4 x 96
DNA Clean & Concentrator™-25 (for purification of up to 25 µg DNA per prep.) *Supplied with **uncapped columns***	D4005 D4006	50 200
DNA Clean & Concentrator™-25 (for purification of up to 25 µg DNA per prep.) *Supplied with **capped columns***	D4033 D4034	50 200
DNA Clean & Concentrator™-100 (for purification of up to 100 µg DNA per prep.)	D4029 D4030	25 50
DNA Clean & Concentrator™-500 (for purification of up to 500 µg DNA per prep.)	D4031 D4032	10 20
Oligo Clean & Concentrator™ (for purification of up to 5 µg of oligonucleotides per prep.)	D4060 D4061	50 200
Genomic DNA Clean & Concentrator™ (for purification of up to 10 µg genomic DNA per prep.)	D4010 D4011	25 100

Refer to Page 3 for column design specifics in each kit.

For Individual Sale	Catalog No.	Size
DNA Binding Buffer	D4003-1-L D4004-1-L	50 ml 100 ml
DNA Wash Buffer (concentrate)	D4003-2-24 D4003-2-48	24 ml 48 ml
DNA Elution Buffer	D3004-4-10	10 ml
Zymo-Spin™ V Column with Reservoir	C1016-25 C1016-50	25 assemblies 50 assemblies
Collection Tubes	C1001-50 C1001-500 C1001-1000	50 tubes 500 tubes 1000 tubes

Popular Products From Zymo Research

Product	Description	Kit Size (Preps.)	Catalog No. (Format)
DNA Clean-up, Concentration & Recovery			
DNA Clean & Concentrator™-5	Clean and concentrate up to 5 µg DNA into ≥6 µl elution volume in as little as 2 minutes with no wash residue carryover.	50 200 50 200	**D4003** (uncapped) **D4004** (uncapped) **D4013** (capped) **D4014** (capped)
DNA Clean & Concentrator™-25	Clean and concentrate 25 µg of DNA into ≥25 µl elution volume in as little as 2 minutes with no wash residue carryover.	50 200 50 200	**D4005** (uncapped) **D4006** (uncapped) **D4033** (capped) **D4034** (capped)
ZR-96 DNA Clean & Concentrator™-5	Quick (30 minute), high throughput recovery of up to 5 µg pure DNA into 10-15 µl minimum elution volume allows for highly concentrated DNA.	2 x 96 4 x 96	**D4023** **D4024**
Genomic DNA Clean & Concentrator™	Quick (5 minute) clean-up of up to 10 µg high molecular weight DNA (≥ 20kb - 200 kb) from any enzymatic reaction or impure preparation without precipitations.	25 100	**D4010** **D4011**
Zymoclean™ Gel DNA Recovery Kit	Purify DNA from high and low-melting agarose gels in minutes.	50 200 50 200	**D4001** (uncapped) **D4002** (uncapped) **D4007** (capped) **D4008** (capped)
ZR-96 Zymoclean™ Gel DNA Recovery Kit	High-throughput DNA purification from high and low-melting agarose gels.	2 x 96 4 x 96	**D4021** **D4022**
Zymoclean™ Large Fragment DNA Recovery Kit	Purify high molecular weight DNA (≥ 20 kb - 200 kb) from high and low-melting agarose gels in minutes.	25 100	**D4045** **D4046**
***OneStep*™ PCR Inhibitor Removal Kit**	Fast, one step procedure for removal of PCR inhibitors such as polyphenolics, humic/fulvic acids, melanin, etc. for successful PCR and other downstream applications.	50 2 x 96	**D6030** **D6035**
Plasmid DNA Purification			
Zyppy™ Plasmid Miniprep Kit	Pellet-Free™ plasmid DNA purification in less than 10 minutes. Recover up to 25 µg DNA in as low as 30 µl.	50 100 400	**D4036** **D4019** **D4020**
Zyppy™-96 Plasmid Miniprep	The fastest and simplest high-throughput method for plasmid purification. Magnetic bead format available for automated liquid handling platforms.	2 x 96 4 x 96 8 x 96 2 x 96 4 x 96 8 x 96	**D4041** (spin plate) **D4042** (spin plate) **D4043** (spin plate) **D4100** (magnetic bead) **D4101** (magnetic bead) **D4102** (magnetic bead)
Zyppy™ Plasmid Midiprep Kit	Pellet-Free™ plasmid DNA purification in 15 minutes in a 150 µl minimum elution volume.	25 50	**D4025** **D4026**
ZR Plasmid MiniPrep™-*Classic*	Plasmid DNA purification in minutes: (alkaline lysis/spin column format for low 30 µl elution volume).	100 400 800	**D4015** **D4016** **D4054**
Genomic DNA Purification			
***Quick-gDNA*™ MiniPrep**	Easy purification from whole blood, plasma, serum, body fluids, buffy coat, tissue, swabs or cultured cells ≥15 minutes without the use of Proteinase K or organic denaturants.	50/200 50/200	**D3006/D3007** uncapped) **D3024/D3025** (capped)
ZR Genomic DNA™-Tissue MiniPrep	igh quality DNA purification from solid tissues (e.g., tail snips, ear punches, adipose tissue, etc.), body fluids, cultured cells, buccal cells, FFPE tissues, hair, and other biological sources using Proteinase K and Fast.	50/200 50/200	**D3050** **D3051**
Environmental DNA Purification Kits	Unique BashingBead™ technology allows isolation of DNA from samples refractory to conventional lysis procedures including tough-to-lyse tissues, soil samples, feces, plants, seeds, insects, bacteria, yeast, filamentous fungi, unicellular and filamentous algae, and protozoa	Spin Column & 96-well Plate	**Visit website for a comprehensive list**
RNA Purification			
RNA Clean & Concentrator™-5	Clean and concentrate up to 5 µg RNA into ≥6 µl elution volume in as little as 5 minutes with no wash residue carryover.	50 200	**R1015** **R1016**
Direct-Zol™ RNA MiniPrep	Quick, spin column purification of high-quality (DNA-free) total RNA ***directly*** from *TRI-Reagent*® or similar acid-guanidinium-phenol based reagents (TRIzol®, RNAzol®, QIAzol®, TriPure, RNA-Bee *etc.*).	50 200	**R2051** **R2053**
ZR RNA MiniPrep	Quick (15 minute) RNA isolation from a variety of sources using *Fast-Spin* column technology without the use of organic denaturants..	50 200	**R1064** **R1065**

Epigenetics Products From Zymo Research

THE Epigenetics COMPANY™

Product	Description	Kit Size	Cat. No. (Format)
Bisulfite Kits for DNA Methylation Detection			
EZ DNA Methylation™ Kit	For the conversion of unmethylated cytosines in DNA to uracil via the chemical-denaturation of DNA and a specially designed CT Conversion Reagent. *Fast-Spin* technology ensures ultra-pure, converted DNA for subsequent DNA methylation analysis. Magnetic bead format for automated liquid handling platforms.	50/200 Rxns. 2 x 96 Rxns. 2 x 96 Rxns. 4 x 96 Rxns.	**D5001/D5002** (column) **D5003** (shallow-well plate) **D5004** (deep-well plate) **D5040** (magnetic bead)
EZ DNA Methylation-Gold™ Kit	For the fast (3 hr.) conversion of unmethylated cytosines in DNA to uracil via heat/chemical-denaturation of DNA and a specially designed CT Conversion Reagent. *Fast-Spin* technology ensures ultra-pure, converted DNA for subsequent DNA methylation analysis. Magnetic bead format for automated liquid handling platforms.	50/200 Rxns. 2 x 96 Rxns. 2 x 96 Rxns. 4 x 96 Rxns.	**D5005/D5006** (column) **D5007** (shallow-well plate) **D5008** (deep-well plate) **D5042** (magnetic bead)
EZ DNA Methylation-Direct™ Kit	Simple and reliable DNA bisulfite conversion directly from blood, tissue (FFPE/LCM), and cells without the prerequisite for DNA purification in as little as 4-6 hrs. The increased sensitivity of this kit makes it possible to amplify bisulfite converted DNA from as few as 10 cells or 50 pg DNA. Magnetic bead format for adaptation to automated liquid handling platforms.	50/200 Rxns. 2 x 96 Rxns. 2 x 96 Rxns. 4 x 96 Rxns.	**D5020/D5021** (column) **D5022** (shallow-well plate) **D5023** (deep-well plate) **D5044** (magnetic bead)
EZ DNA Methylation-Lightning™ Kit	Complete bisulfite conversion in about an hour using a unique liquid format conversion reagent. *Fast-Spin* technology ensures ultra-pure, converted DNA for subsequent DNA methylation analysis. Magnetic bead format for automated liquid handling platforms.	50/200 Rxns. 2 x 96 Rxns. 2 x 96 Rxns. 4 x 96 Rxns.	**D5030/D5031** (column) **D5032** (shallow-well plate) **D5033** (deep-well plate) **D5046** (magnetic bead)
EZ DNA Methylation-Startup™ Kit	Designed for the first time user requiring a consolidated product to perform DNA methylation analysis. Includes technologies for sample processing, bisulfite treatment of DNA, and PCR amplification of "converted" DNA for methylation analysis.	1 Kit	**D5024**
Methylated DNA Standards			
Universal Methylated Human DNA Standard	Human (male) genomic DNA having all CpG sites methylated. To be used for the evaluation of bisulfite-mediated conversion of DNA. Supplied with a control primer set.	1 Set	**D5011**
Universal Methylated Mouse DNA Standard	Mouse (male) DNA having all CpG sites methylated. To be used for the evaluation of bisulfite-mediated conversion of DNA. Supplied with a control primer set.	1 Set	**D5012**
Region-Specific DNA Methylation Screening			
***OneStep* qMethyl™ Kit**	Single step real-time PCR procedure for bisulfite-free determination of DNA methylation status. Available without fluorescent dye for probe-based detection (Lite).	1 x 96 Rxns. 1 x 96 Rxns.	**D5310** **D5311** (Lite)
***OneStep* qMethyl™ Array**	Premade 96-well assay for bisulfite-free determination of region-specific DNA methylation assessment in the promoter region of any one of the following prominent tumor suppressor genes: RASSF1, RARB, CDKN2A (p16), MGMT, or CCND2.	1 x 96 Rxns.	**D5312**
Epigenetics Services *For more information, visit* http://www.zymoresearch.com/services *or inquire at* services@zymoresearch.com.			
Services for Methylated DNA Analysis Simplify biomarker discovery with our 5-mC Analysis platforms that combine Zymo's well-established bisulfite technologies with next-generation sequencing for the most comprehensive DNA methylation analysis services available.			
Services for Hydroxymethylated DNA Analysis Novel genome-wide 5-hmC analysis platform featuring cutting-edge 5-hmC DNA enrichment, library prep, and next-generation sequencing technologies to ensure the sensitivity of 5-hmC detection in genome-wide context.			
Hydroxymethylation Detection			
Quest 5-hmC™ DNA Enrichment Kit	Featuring J-base 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.	25 Rxns. 50 Rxns.	**D5420** **D5421**
Quest 5-hmC™ DNA ELISA Kit	Streamlined workflow for both the direct and relative quantitation of 5-hmC, in a global genomic context, with a robust colorimetric readout.	1 x 96 Rxns. 2 x 96 Rxns.	**D5425** **D5426**
Anti-5-Hydroxymethylcytosine Polyclonal Antibody	Polyclonal antibody has been engineered to maximize sensitivity to low amounts of hydroxymethylated gDNA while minimizing crossreactivity with unmodified or methylated cytosine residues. The antibody is suitable for use in ELISA, IP, and immunohistochemical labeling.	50 µg 200 µg	**A4001-50** **A4001-200**
DNA Degradase™ **DNA Degradase Plus™**	Whole genomic DNA can be treated with these enzyme cocktails for processing to individual nucleotides (Degradase™) or nucleosides (Degradase Plus™) for interrogation in chromatographic and spectroscopic methods including TLC, LC/MS, MALDI-TOF, and more.	500 U 2000 U 250 U 1000 U	**E2016** **E2017** **E2020** **E2021**
Other…			
Zymo*Taq*™ DNA Polymerase	Zymo*Taq*™ "hot start" DNA Polymerase is specifically designed for the amplification of "difficult" DNA templates including: bisulfite-treated DNA for methylation detection. The product generates specific amplicons with little or no by-product formation.	50 Rxns. 200 Rxns	**E2001/E2001** (system) **E2003/E2004** (premix)
Methylated-DNA IP Kit	IP with a highly specific anti-5-methylcytosine monoclonal antibody. Designed for the enrichment of 5-methylcytosine-containing DNA from any pool of fragmented genomic DNA for use in genome-wide methylation analysis.	10 Rxns.	**D5101**