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The Beauty of Science is to Make Things Simple

INSTRUCTION MANUAL

ZR Serum DNA Kit™

Catalog No. **D3013**

Highlights

- Process up to 250 ml serum or plasma using innovative *ZymoBead™* silica-bead technology.
- Scalability facilitates processing of small (100 µl) or large (10 ml) sample volumes.
- Compatible with commonly used anticoagulants (i.e., EDTA, heparin, citrate).
- Isolated DNA is ideal for PCR and other sensitive analytical procedures.

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Satisfaction of all Zymo Research products is guaranteed. If you are not satisfied with this product please call 1-888-882-9682.

Product Contents

ZR Serum DNA Kit™	D3013 (samples up to 250 ml)	Storage Temperature
Genomic Lysis Buffer*	1000 ml	Room Temp.
DNA Wash Buffer*	24 ml	Room Temp.
DNA Elution Buffer	4 ml	Room Temp.
ZymoBeads™	1 ml	Room Temp.
Instruction Manual	1	-

Note - 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 maximal performance and reliability.

* For optimal performance, add beta-mercaptoethanol to 0.5%(v/v) i.e., 5 ml per 1000 ml.

** Add 96 ml of 100% ethanol to the DNA Wash Buffer concentrate prior to use.

Specifications

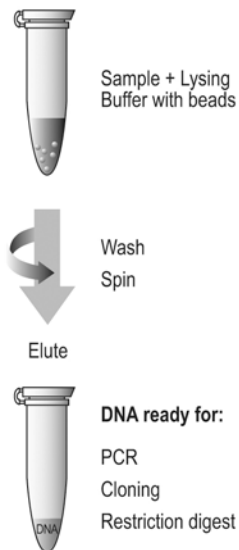
- **Sample Sources** – Plasma or serum from humans, mice, rats, etc. Also, a variety of low cell density biological liquids are effectively processed using this kit.
- **DNA Purity** – High-quality DNA is eluted with **DNA Elution Buffer** or water. DNA is well suited for PCR and other downstream applications. Typical absorption indices are $A_{260}/A_{280} > 1.7$
- **DNA Size Limits** – Capable of recovering DNA up to and above 40 kb. In most instances, mitochondrial DNA and viral DNA (if present) will also be recovered. Small DNA fragments as low as 50 bp can be isolated with modification to the protocol (*see sidebar pg. 4*)
- **ZymoBead™ Binding Capacity** – ~5 µg DNA per 10 µl ZymoBead™ suspension.
- **DNA Recovery** – Typically, DNA is eluted into 10-35 µl **DNA Elution Buffer** or water for the *standard procedure*. This volume can be adjusted to correct for increased sample volumes.
- **Equipment** – centrifuge and/or microcentrifuge, vortex

Note - ™ Trademarks of Zymo Research Corporation. This product is for research use only and should only be used by trained professionals. It is not intended for use in diagnostic procedures. Some reagents included with this kit are irritants. Wear protective gloves and eye protection. Follow the safety guidelines and rules enacted by your research institution or facility.

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Product Description

The **ZR Serum DNA Kit™** is based on a state of the art, single buffer procedure for rapid DNA isolation from large volume serum and plasma samples. The product has been optimized to yield high quality DNA from samples without RNA contamination. The **ZR Serum DNA Kit™** recovers genomic, mitochondria, and viral DNAs up to and above 40 kb and can also be used to isolate small DNA fragments from serum. The uniquely formulated **Genomic Lysis Buffer** efficiently lyses cells, virus, and/or cellular particles releasing DNA which is then adsorbed directly onto the surfaces of the provided **ZymoBeads™**. The resulting DNA/**ZymoBead™** complexes are separated by centrifugation and then washed to remove contaminants. DNA is eluted from the beads directly into the supplied low-salt **Elution Buffer** or water. DNA purified with the **ZR Serum DNA Kit™** is ideal for PCR and other sensitive analytical procedures.



Ultra-pure DNA is ideal for...

- ✓ PCR
- ✓ Endonuclease Digestion
- ✓ Genotyping, etc.

For **Technical Assistance**, please contact those at **Zymo Research's Technical Department** at 1-888-882-9682 or E-mail to tech@zymoresearch.com.

For small DNA fragment isolation, add 0.3 volumes isopropanol to the mixture. (For example, to a 1 ml mixture of serum, Genomic Lysis Buffer and ZymoBeads™, add 300 µl isopropanol.)

The pellet should be completely resuspended to ensure no impurities are transferred to the next step.

Elution of DNA from the ZymoBeads™ is dependent on pH and temperature. If water is used, ensure the pH is >6.0. Also, the total yield may be improved by eluting the DNA with Elution Buffer or water pre-equilibrated to 60-70°C.

PROTOCOL

- **Before Starting:** Add 96 ml 100% ethanol to the DNA Wash Buffer concentrate.
- For optimal performance, add beta-mercaptoethanol (user supplied) to the **Genomic Lysis Buffer** to a final dilution of 0.5%(v/v) i.e., 5 ml per 1000 ml.

Note: All procedures should be performed at room temperature (15-30 °C) unless otherwise instructed. Most centrifugation steps can be performed at 2,000-2,500 x g (~5,000 rpm in a standard tabletop microcentrifuge).

The following protocol is designed for serum and plasma samples. The volume(s) that can be processed can be adjusted depending on experimental needs. The “standard procedure” using 10 µl **ZymoBeads™** (examples 1 and 2 below) can also be used for other biological liquids having low cell densities (<1.0 x10⁴ cells). However, the amount of ZymoBeads can be adjusted to suit any particular application.

1. Ensure that the **ZymoBeads™** are resuspended by vortexing. In a conical 50 ml tube add 4 volumes of **Genomic Lysis Buffer** to each volume of sample (4:1) and then add 10 µl of **ZymoBeads™**.

Example #1: 800 µl of plasma, add 3.2 ml of **Genomic Lysis Buffer** and 10 µl of **ZymoBeads™**.

Example #2: 5.0 ml of serum, add 20 ml of **Genomic Lysis Buffer** and 10 µl of **ZymoBeads™**.

2. Mix by placing sample on a rotator/rocker for 2 hours at room temperature or overnight at 0-4°C.
3. Centrifuge tube for 1-2 minutes. Discard the supernatant.
4. Add 500 µl of **DNA Wash Buffer** to the **ZymoBeads™**. Resuspend the pellet and then transfer mixture to a 1.5 ml microcentrifuge tube.
5. Centrifuge for 1 minute in a microcentrifuge. Discard the supernatant.
6. Add another 500 µl of **DNA Wash Buffer** to the **ZymoBeads™**. Resuspend the pellet and centrifuge for 1 minute. Discard the supernatant.
7. Recentrifuge briefly and remove any residual wash buffer. Air-dry the pellet for 15 minutes.
8. Add 10-35 µl **DNA Elution Buffer** or water to the **ZymoBeads™** and resuspend by repeated pipetting.
9. Centrifuge at 10,000 x g for 1 minute.
10. Collect the supernatant which contains the purified DNA. The DNA can be used immediately or stored at -20°C for later use.

Troubleshooting:

1. **DNA degradation:** Check for DNase contamination. All reagents and components supplied with the **ZR Serum DNA Kit™** are DNase-free. However, DNase contamination could result during the processing of some samples. Check pipets, pipet tips, microcentrifuge tubes, etc., and exercise the appropriate precautions during the DNA purification procedure.
2. **DNA is not performing well in subsequent experiments:** Ensure the correct volume of **Genomic Lysis Buffer** has been added to the sample. Also, make sure all centrifugation steps are completed for the indicated times and speeds (rcfs). Failure to do so may result in incomplete washing, which may cause salts to be eluted with the DNA affecting quantitation and subsequent experiments including enzymatic processes like PCR.
3. **RNA contamination:** The buffers and spin columns provided in this kit are designed to efficiently remove RNA during the DNA purification procedure. However, additional RNA removal (e.g., digestion with RNase A) may be necessary for subsequent applications sensitive to trace amounts of RNA.

Ordering Information

Product Description	Catalog No.
ZR Serum DNA Kit™	D3013

For Individual Sale	Catalog No.	Amount
Genomic Lysis Buffer	D3004-1-50	50 ml
	D3004-1-100	100 ml
DNA Wash Buffer	D4003-2-6	6 ml
	D4003-2-24	24 ml
DNA Elution Buffer	D3004-4-4	4 ml
	D3004-4-16	16 ml
ZymoBeads™	D3004-3-1	1 ml
	D3004-3-4	4 x 1ml

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Popular DNA Purification Products from Zymo Research

Product	Format	Kit Size	Cat No.
Fragment DNA Clean-up, Concentration & Recovery			
DNA Clean & Concentrator™-5	Spin Column Format (up to 5 µg/prep.)	50 preps. 200 preps.	D4003*, D4013 D4004*, D4014
DNA Clean & Concentrator™-25	Spin Column Format (up to 25 µg/prep.)	50 preps. 200 preps.	D4005*, D4033 D4006*, D4034
DNA Clean & Concentrator™-100	Spin Column Format (up to 100 µg/prep.)	25 preps. 50 preps.	D4029 D4030
DNA Clean & Concentrator™-500	Spin Column Format (up to 500 µg/prep.)	10 preps. 20 preps.	D4031 D4032
ZR-96 DNA Clean & Concentrator™-5	96-Well Format (up to 5 µg/well; deep well)	2x96 preps. 4x96 preps.	D4023 D4024
Genomic DNA Clean & Concentrator™	Spin Column Format (up to 10 µg/prep.)	25 preps. 100 preps.	D4010 D4011
ZR-96 DNA Clean-up Kit™	96-Well Format (up to 5 µg/well; shallow well)	2x96 preps. 4x96 preps.	D4017 D4018
ZR DNA Sequencing Clean-up Kit™	Spin Column Format (up to 5 µg/prep.)	50 preps. 200 preps.	D4050 D4051
ZR-96 DNA Sequencing Clean-up Kit™	96-Well Format (up to 5 µg/well)	2x96 preps. 4x96 preps.	D4052 D4053
OneStep™ PCR Inhibitor Removal Kit	Spin Column Format (up to 25 µg/prep.)	50 preps.	D6030
OneStep-96™ PCR Inhibitor Removal Kit	96-Well Format (up to 5 µg/well)	2x96 preps.	D6035
Zymoclean™ Gel DNA Recovery Kit	Spin Column Format (up to 5 µg/prep.)	50 preps. 200 preps.	D4001 D4002
ZR-96 Zymoclean™ Gel DNA Recovery Kit	96-Well Format (up to 5 µg/well)	2x96 preps. 4x96 preps.	D4021 D4022
Zymoclean™ Large Fragment DNA Recovery Kit	Spin Column Format (up to 10 µg/prep.)	25 preps. 100 preps.	D4045 D4046
Plasmid DNA Isolation			
Zyppy™ Plasmid Miniprep Kit	Pellet Free, Spin Column Format	50 preps. 100 preps. 400 preps. 800 preps.	D4036 D4019 D4020 D4037
Zyppy™ Plasmid Midiprep Kit	Pellet Free, Spin Column Format	25 preps. 50 preps.	D4025 D4026
Zyppy™ Plasmid Maxiprep Kit	Spin/Vacuum Column Format	10 preps. 20 preps.	D4027 D4028
ZR Plasmid Miniprep™-Classic	Spin Column Format	100 preps. 400 preps. 800 preps.	D4015 D4016 D4054
ZR BAC DNA Miniprep Kit	BAC/PAC plasmid DNA Isolation. Spin Column Format	25 preps. 100 preps.	D4048 D4049
Environmental DNA Isolation			
ZR Soil Microbe DNA MicroPrep™	Bead Bashing, Spin Column Format (up to 5 µg/prep.)	50 preps.	D6003
ZR Soil Microbe DNA MiniPrep™	Bead Bashing, Spin Column Format (up to 25 µg/prep.)	50 preps.	D6001
ZR Soil Microbe DNA MidiPrep™	Bead Bashing, Spin Column Format (up to 125 µg/prep.)	25 preps.	D6101
ZR-96 Soil Microbe DNA Kit™	Bead Bashing, 96-Well Format (up to 5 µg/well)	2x96 preps.	D6002
ZR Fungal/Bacterial DNA MicroPrep™	Bead Bashing, Spin Column Format (up to 5 µg/prep.)	50 preps.	D6007
ZR Fungal/Bacterial DNA MiniPrep™	Bead Bashing, Spin Column Format (up to 25 µg/prep.)	50 preps.	D6005
ZR Fungal/Bacterial DNA MidiPrep™	Bead Bashing, Spin Column Format (up to 125 µg/prep.)	25 preps.	D6105
ZR-96 Fungal/Bacterial DNA Kit™	Bead Bashing, 96-Well Format (up to 5 µg/well)	2x96 preps.	D6006
ZR Fecal DNA MicroPrep™	Bead Bashing, Spin Column Format (up to 5 µg/prep.)	50 preps.	D6012
ZR Fecal DNA MiniPrep™	Bead Bashing, Spin Column Format (up to 25 µg/prep.)	50 preps.	D6010
ZR Fecal DNA MidiPrep™	Bead Bashing, Spin Column Format (up to 125 µg/prep.)	25 preps.	D6110
ZR-96 Fecal DNA Kit™	Bead Bashing, 96-Well Format (up to 5 µg/well)	2x96 preps.	D6011
ZR Tissue & Insect DNA MicroPrep™	Bead Bashing, Spin Column Format (up to 5 µg/prep.)	50 preps.	D6015
ZR Tissue & Insect DNA MiniPrep™	Bead Bashing, Spin Column Format (up to 25 µg/prep.)	50 preps.	D6016
ZR Tissue & Insect DNA MidiPrep™	Bead Bashing, Spin Column Format (up to 125 µg/prep.)	25 preps.	D6115
ZR-96 Tissue & Insect DNA Kit™	Bead Bashing, 96-Well Format (up to 5 µg/well)	2x96 preps.	D6017
ZR Plant/Seed DNA MicroPrep™	Bead Bashing, Spin Column Format (up to 5 µg/prep.)	50 preps.	D6022
ZR Plant/Seed DNA MiniPrep™	Bead Bashing, Spin Column Format (up to 25 µg/prep.)	50 preps.	D6020
ZR Plant/Seed DNA MidiPrep™	Bead Bashing, Spin Column Format (up to 125 µg/prep.)	25 preps.	D6120
ZR-96 Plant/Seed DNA Kit™	Bead Bashing, 96-Well Format (up to 5 µg/well)	2x96 preps.	D6021

* Uncapped Spin Column Format

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