



# SZABO SCANDIC

Part of Europa Biosite

## Produktinformation



Forschungsprodukte & Biochemikalien



Zellkultur & Verbrauchsmaterial



Diagnostik & molekulare Diagnostik



Laborgeräte & Service

Weitere Information auf den folgenden Seiten!  
See the following pages for more information!



### Lieferung & Zahlungsart

siehe unsere [Liefer- und Versandbedingungen](#)

### Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

### SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

[mail@szabo-scandic.com](mailto:mail@szabo-scandic.com)

[www.szabo-scandic.com](http://www.szabo-scandic.com)

[linkedin.com/company/szaboscandic](https://www.linkedin.com/company/szaboscandic) 

# Direct-zol™ -96 MagBead RNA

TRIZOL® In. RNA Out.

## Highlights

- High-throughput, magnetic bead-based purification of total RNA (including small/microRNAs) **directly** from TRIZOL®, TRI Reagent® or similar acid-guanidinium-phenol based reagents.
- No need for chloroform, phase-separation or precipitation steps.
- RNA is ready for Next-Gen Sequencing, RT-qPCR, etc. *DNase I is included.*

Catalog Numbers:

R2100, R2101, R2102, R2103



Scan with your smart-phone camera to view the online protocol/video.



# Table of Contents

---

<b>Product Contents</b> .....	<b>01</b>
<b>Specifications</b> .....	<b>02</b>
<b>Product Description</b> .....	<b>03</b>
<b>Input Capacity &amp; Average Yield Chart</b> .....	<b>04</b>
<b>Protocol</b> .....	<b>05</b>
(I) Buffer Preparation .....	<b>05</b>
(II) Sample Preparation.....	<b>05</b>
Cells: Animal, Bacteria	<b>05</b>
Tough-to-Lyse Samples: Tissue, Microbes, etc.	<b>06</b>
Blood, Rxn Clean-up, DNA/RNA Shield Samples	<b>06</b>
(III) RNA Purification .....	<b>07</b>
<b>Appendices</b> .....	<b>08</b>
Automation Scripts	<b>08</b>
Proteinase K Treatment	<b>08</b>
<b>Ordering Information</b> .....	<b>09</b>
<b>Complete Your Workflow</b> .....	<b>10</b>
<b>Troubleshooting Guide</b> .....	<b>11</b>
<b>Notes</b> .....	<b>12</b>
<b>Guarantee</b> .....	<b>13</b>

# Product Contents

Direct-zol™-96 MagBead RNA	R2100 (96)	R2101 (96)	R2102 (4 x 96)	R2103 (4 x 96)
TRI Reagent®	-	50 ml (x2)	-	200 ml (x2)
MagBinding Beads	3 ml	3 ml	12 ml	12 ml
MagBead DNA/RNA Wash 1 <sup>1</sup> (concentrate)	30 ml (x2)	30 ml (x2)	120 ml (x2)	120 ml (x2)
MagBead DNA/RNA Wash 2 <sup>2</sup> (concentrate)	20 ml (x2)	20 ml (x2)	80 ml (x2)	80 ml (x2)
RNA Prep Buffer	100 ml (x2)	100 ml (x2)	100 ml (x4)	100 ml (x4)
DNase I <sup>3</sup> (lyophilized)	250 U (x3)	250 U (x3)	1500 U (x2)	1500 U (x2)
DNA Digestion Buffer	4 ml	4 ml	4 ml	4 ml
DNase/RNase-Free Water	30 ml	30 ml	100 ml	100 ml
Instruction Manual	1 pc	1 pc	1 pc	1 pc

**Storage Temperature** - Store all kit components (i.e., buffers, columns) at room temperature.

Before use:

1 Add 20 ml (R2100, R2101) or 80 ml (R2102, R2103) of isopropanol to the **MagBead DNA/RNA Wash 1** concentrate and mix well.

2 Add 30 ml (R2100, R2101) or 120 ml (R2102, R2103) of isopropanol to the **MagBead DNA/RNA Wash 2** concentrate and mix well.

3 Reconstitute lyophilized **DNase I** according to Buffer Preparation, page 5.

# Specifications

- **Sample Sources** – Any sample stored and preserved in TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar<sup>1</sup>. (animal cells, tissue, bacteria, yeast, biological fluids, samples stored in DNA/RNA Shield™ and in-vitro processed RNA (e.g., transcription products, DNase-treated or labeled RNA)).
- **Sample Inactivation** – TRI Reagent<sup>®</sup> (provided with **R2101** & **R2103** only) inhibits RNase activity and inactivates viruses and other infectious agents.
- **Size** – Total RNA including small/microRNAs (≥ 17 nt).
- **Purity** –  $A_{260}/A_{280}$  &  $A_{260}/A_{230} > 1.8$ . RNA is ready for Next-Gen Sequencing, RT-qPCR, etc.
- **Binding Capacity** – 10 µg RNA per 20 µl **MagBinding Beads**.
- **Compatibility** – TRIzol<sup>®</sup>, RNAzol<sup>®</sup>, QIAzol<sup>®</sup>, TriPure™, TriSure™ or similar acid-guanidinium-phenol based reagents can be used in place of TRI Reagent<sup>®</sup>.

Also, compatible with samples in TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent that contain chloroform, 1-bromo-3-chloropropane (BCP), or 4-bromoanisole (BAN).

- **Elution Volume** – ≥ 50 µl **DNase/RNase-Free Water**.
- **Recommended Materials** (available separately): ZR-96 MagStand (P1005), Collection Plate (C2002; capacity 1.2 ml/well), 96-Well Block (P1001; capacity 2 ml/well), Elution Plate (C2003; capacity 0.35 ml/well), 96-Well Plate Cover Foil (C2007; 2, 6, 8 pack), DNase/RNase-Free Tubes (C2001; 100 pack).
- **Equipment Needed** (user provided): Magnetic stand or separator, liquid handler or robotic sample processor.

---

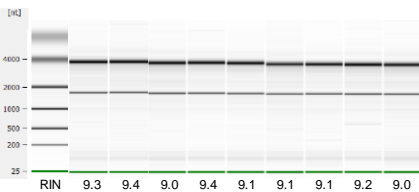
<sup>1</sup> RNAzol<sup>®</sup>, QIAzol<sup>®</sup>, TriPure™, TriSure™ or similar acid-guanidinium-phenol reagent.

# Product Description

The **Direct-zol™-96 MagBead RNA** kit provides a high-throughput, magnetic bead-based isolation of high-quality RNA *directly* from samples in TRIzol®, TRI Reagent® or similar reagent<sup>1</sup>. The extraction method inactivates viruses and other infectious agents<sup>2</sup>. Total RNA (including small/microRNAs) are effectively isolated from a variety of sample sources (cells, tissues, biological liquids, DNA/RNA Shield™ samples, etc.).

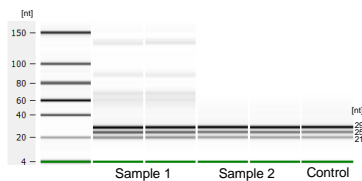
The procedure is easy: simply add ethanol and **MagBinding Beads** to a sample in TRIzol®/TRI Reagent®, wash and elute the RNA. No chloroform, phase separation or precipitation steps are necessary. High-quality total RNA is ready for Next-Gen sequencing, RT-qPCR, transcription profiling, hybridization, etc.

## High-quality total RNA



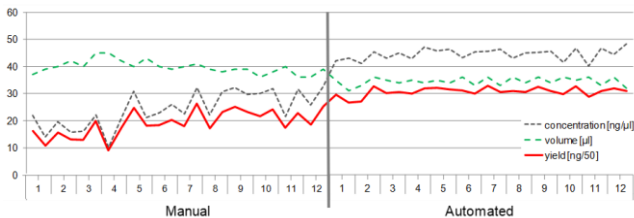
RNA quality (RIN) assessed using a Bioanalyzer. RNA was purified from epithelial cell using the the **Direct-zol™-96 MagBead RNA** kit on Freedom EVO® (Tecan).

## Efficient small RNA recovery



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

## Reproducible sample processing



Comparison between manual and automated (Freedom EVO®, Tecan) sample processing with the **Direct-zol™-96 MagBead RNA** kit across a 96-well plate. RNA was purified from human epithelial cells ( $5 \times 10^5$ /well).

1 RNAzol®, QIAzol®, TriPure™, TriSure™ or similar acid-guanidinium-phenol reagent.  
2 TRI Reagent® provided with catalog #R2101 and #R2103.

## Input Capacity and Average RNA Yield

Input	Average RNA Yield	Kit Capacity
<b>Cells</b>	1 µg (per 10 <sup>5</sup> cells)	Up to 10 <sup>6</sup>
HeLa	1.5 µg	
<b>High Yield Tissue</b> <sup>1 (mouse)</sup>	≥ 3 µg (per 1 mg)	Up to 2 mg
Spleen	3-5 µg	
Liver	4-6 µg	
<b>Low Yield Tissue</b> <sup>1 (mouse)</sup>	≤ 3 µg (per 1 mg)	Up to 5 mg
Brain, Heart	0.5-1.5 µg	
Muscle	0.5-2 µg	
Lung	1-2 µg	
Intestine	1-3 µg	
Kidney	2-3 µg	
<b>Whole Blood</b> <sup>2</sup>	(per 100 µl)	Up to 200 µl
Porcine	1-2 µg	
Human	0.2-1 µg	

1 Yield from tissue can vary due to other factors (i.e., organism type, physiological state, and growth conditions).

2 Yield from blood can vary based upon collection, sample preparation, donor, age, and/or health conditions.

# Protocol

The protocol consists of: (I) Buffer Preparation, (II) Sample Preparation and (III) RNA Purification.

The following guidelines are provided for processing various sample types in TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar<sup>1</sup> acid-guanidinium-phenol reagents prior to column purification of the RNA (see page 4 for Input Capacity and Average RNA Yield).

## (I) Buffer Preparation

- ✓ Add 20 ml (R2100, R2101) or 80 ml (R2102, R2103) of isopropanol to the **MagBead DNA/RNA Wash 1** concentrate and mix well.
- ✓ Add 30 ml (R2100, R2101) or 120 ml (R2102, R2103) of isopropanol to the **MagBead DNA/RNA Wash 2** concentrate and mix well.
- ✓ Reconstitute each vial of lyophilized **DNase I** with **DNase/RNase-Free Water** in a conical tube (not provided). Mix by gentle inversion and store frozen aliquots.  
**#E1011-A (1500 U)**, add 13.5 ml **water**  
**#E1009-A (250 U)**, add 2.25 ml **water**

For each sample to be treated, prepare **DNase I Reaction Mix** (scale up proportionally): Add 45  $\mu$ l **DNase I** (reconstituted) and 5  $\mu$ l **DNA Digestion Buffer** in a nuclease-free tube (not provided), mix by gentle inversion and place on ice until ready to use.

## (II) Sample Preparation<sup>2</sup>

- ✓ Perform all steps at room temperature and centrifugation at 10,000-16,000 x g for 1 minute.

## Cells

Lyse animal or gram(-) bacteria cells\* directly in a culture dish\*\* or resuspend pelleted cells in an appropriate volume (see table below) of TRI Reagent<sup>®</sup> or similar<sup>1</sup> and mix thoroughly. Centrifuge to remove debris (if any) and transfer the cleared supernatant into a nuclease-free tube (not provided). Proceed to RNA Purification (page 7).

Animal	Gram(-) bacteria	Add TRI Reagent <sup>®</sup>
$\leq 10^5$	-	$\geq 100 \mu$ l
$\leq 10^6$	$\leq 10^8$	$\geq 300 \mu$ l

\* For cell suspensions, add 3 volumes of TRI Reagent<sup>®</sup> to 1 volume of cell suspension.

\*\* For direct lysis in a dish, add 100  $\mu$ l for each cm<sup>2</sup> of culture surface area.

1 TRIzol<sup>®</sup>, RNAzol<sup>®</sup>, QIAzol<sup>®</sup>, TriPure™, TriSure™ or similar acid-guanidinium-phenol reagent.

2 RNA yield can vary with sample types, organism, quality and treatment of the starting material (see page 4). To ensure complete lysis and homogenization of a sample, use a sufficient amount of TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent. For detailed processing information, refer to the TRI Reagent<sup>®</sup> product manual (or manufacturer's instructions for the reagent used).



## Tough-to-Lyse Samples

Tough-to-lyse samples (see table below) can be homogenized in  $\geq 800 \mu\text{l}$  TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar<sup>1</sup> with a mortar/pestle, dounce, syringe, tissue grinder, or bead beating with a high-speed homogenizer.

To remove particulate debris from homogenized tissue, centrifuge and transfer the supernatant into a new nuclease-free tube. Proceed to RNA Purification (page 7).

Recommended: Use ZR BashingBead<sup>™</sup> Lysis Tubes (materials sold separately; #S6012, #S6003, #S014) for complete lysis and homogenization.

Input	Gram(-) bacteria (optional; easy-to-lyse)	Gram(+) bacteria	Tissue	Pathogen (microbes in tissue)
per prep	bacteria ( $\leq 10^8$ )	bacteria ( $\leq 10^8$ ) yeast ( $\leq 10^7$ )	animal: high yield ( $\leq 2 \text{ mg}$ ) animal: low yield ( $\leq 5 \text{ mg}$ ) plant ( $\leq 20 \text{ mg}$ )	animal/insect, plant ( $\leq 5 \text{ mg}$ )
lysis beads catalog #	0.5 mm and 0.1 mm; <b>S6012</b>	0.5 mm and 0.1 mm; <b>S6012</b>	2.0 mm; <b>S6003</b>	2.0 mm and 0.1 mm; <b>S6014</b>
high- speed <sup>2,3</sup>	30 sec	5-10 min	30-60 sec	3-5 min
low-speed <sup>3</sup>	5-10 min	20-40 min	3-5 min	5-10 min

## Liquids

Add an appropriate volume of TRI Reagent<sup>®</sup> or similar<sup>1</sup> to a liquid sample and mix thoroughly (see table below). To remove particulate debris (if any), centrifuge and transfer the supernatant into an RNase-free tube. Proceed to RNA Purification (page 7).

Recommended: For biological samples (whole-blood, plasma, serum, buffy coat, PBMCs, WBCs, FACS, etc.) or samples collected in DNA/RNA Shield<sup>™4</sup>, perform Proteinase K treatment<sup>5</sup> (sold separately) prior to adding TRI Reagent<sup>®</sup>.

Sample		Add TRI Reagent <sup>®</sup>
<b>Biological liquid</b> (blood, plasma, serum, WBCs, FACS, etc.) or <b>Reaction clean-up</b> (DNase I treated RNA, <i>in vitro</i> transcription, labeling, etc.).	100 $\mu\text{l}$	$\geq 300 \mu\text{l}$
<b>Samples in DNA/RNA Shield<sup>™</sup></b> (biological sample <sup>4,5</sup> or stored purified RNA).	100 $\mu\text{l}$	100 $\mu\text{l}$

1 ZR-96 BashingBead<sup>™</sup> Lysis Rack (2.0 mm) (S6002-96-2) and ZR BashingBead<sup>™</sup> Lysis Tubes (2.0 mm) (S6003-50) are sold separately.

2 High-speed homogenizers (e.g., MP Bio FastPrep-24<sup>™</sup>, Bertin Precellys, etc.). Low-speed homogenizers (e.g., Vortex Genie, etc.).

3 DNA/RNA Shield<sup>™</sup> reagent (R1100, R1200) or DNA/RNA Shield<sup>™</sup> Blood Collection Tube (R1150).

4 For Proteinase K treatment, see page 8.

### (III) RNA Purification

1. Add an equal volume ethanol (95-100%) to a sample lysed in TRIzol, TRI Reagent® or similar reagent and mix well<sup>1</sup>.

Example: Add 400 µl ethanol to 400 µl mixture (sample lysed in TRI Reagent®).

2. Add 20 µl **MagBinding Beads** and mix well<sup>1</sup> for 10 minutes.

Important: **MagBinding Beads** settle quickly, ensure that beads are kept in suspension while dispensing.

3. Transfer the plate/tube to the magnetic stand<sup>2</sup> until beads have pelleted, then aspirate<sup>3</sup> and discard the cleared supernatant.
4. Add 500 µl **MagBead DNA/RNA Wash 1** and mix well<sup>1</sup>. Pellet the beads<sup>2,3</sup> and discard the supernatant.
5. Add 500 µl **MagBead DNA/RNA Wash 2** and mix well<sup>1</sup>. Pellet the beads<sup>2,3</sup> and discard the supernatant.
6. Add 500 µl ethanol (96-100%) and mix well<sup>1</sup>. Pellet the beads<sup>2,3</sup> and discard the supernatant.
7. Repeat step 6.

8. **DNase I treatment (optional)**

(D1) Add 50 µl **DNase I Reaction Mix** and mix gently for 10 minutes.

(D2) Add 500 µl **RNA Prep Buffer** and mix well for 10 minutes. Pellet the beads<sup>2,3</sup> and discard the supernatant.

(D3) Repeat steps 6-7.

9. Dry the beads for 10 minutes or until fully dry<sup>5</sup>.
10. To elute RNA from the beads, add 50 µl **DNase/RNase-Free Water** and mix well<sup>1</sup> for 5 minutes.
11. Transfer the plate/tube to the magnetic stand<sup>2</sup> until beads have pelleted, then aspirate<sup>3</sup> and dispense the eluted RNA to a new plate/tube.

The eluted RNA can be used immediately or stored frozen.

---

1 For all buffer additions and incubation steps, mix well by pipetting the beads up and down several times and/or by shaking (vortexing) at ~1,300 rpm. Optimization may be required.

2 Use a strong-field magnetic stand or separator (e.g., ZR-96 MagStand, P1005; sold separately) to pellet beads.

3 Some beads will adhere to the sides of the well (or tube). When removing the supernatant, aspirate slowly to allow these beads to be pulled to the magnet as the liquid level is lowered.

4 Before use, add ethanol to the buffer concentrate (Buffer Preparation, page 5).

5 Beads will change in appearance from glossy black when still wet to a dull brown when fully dry. Alternatively, a heat block can be used (25-55°C).

# Appendices

## Automation Scripts

**Direct-zol™-96 MagBead RNA** (R2100-R2103) is compatible with any automated platform. For automation scripts and related technical support, email [automation@zymoresearch.com](mailto:automation@zymoresearch.com). In the subject line, please include “Automation Scripts”, instrument used and the product catalog number.

Automated platforms scripted with Direct-zol RNA™ MagBead kit: Tecan® Fluent, Hamilton®: STAR, STARlet, Kingfisher®: Flex, Duo Prime, Presto, EpMotion® 5073 (also compatible with other EpMotion devices). \*For automation platforms with “dead volume” liquid handler dispensing, additional reagents are available separately (page 9).

## Proteinase K Treatment

- ✓ Proteinase K treatment can be performed on protein-rich samples stored in **DNA/RNA Shield™** (2X concentrate; #R1200) (e.g., tissue, blood cells, plasma, serum, saliva, sputum, etc.) using **Proteinase K Set** (#D3001-2-5, D3001-2-20; sold separately).

Add 10 µl Proteinase K (reconstituted) to 1 ml DNA/RNA Shield sample (scale proportionally) and mix by inversion. Then incubate at room temperature (20-30°C) for 30 minutes (homogenized) or 2-5 hours (non-homogenized). Optimization may be required.

---

1 Yield from tissue can vary due to other factors (i.e., organism type, physiological state and growth conditions).  
2 Yield from blood can vary based upon collection, sample preparation, donor, age, and/or health conditions.

# Ordering Information

Product Description	Catalog No.	Size
<b>Direct-zol™-96 MagBead RNA</b> (TRI Reagent® <u>not</u> included)	R2100 R2102	2 x 96 preps. 4 x 96 preps.
<b>Direct-zol™-96 MagBead RNA</b> (supplied with TRI Reagent®)	R2101 R2103	2 x 96 preps. 4 x 96 preps.

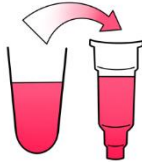
Individual Kit Components	Catalog No.	Amount
<b>TRI Reagent®</b>	R2050-1-50 R2050-1-200	50 ml 200 ml
<b>MagBead DNA/RNA Wash 1</b> (concentrate)	R2130-1-30 R21301-120	30 ml 120 ml
<b>MagBead DNA/RNA Wash 2</b> (concentrate)	R2130-2-20 R2130-2-80	20 ml 80 ml
<b>MagBinding Beads</b>	D4100-2-3 D4100-2-12	3 ml 12 ml
<b>RNA Prep Buffer</b>	R1060-2-100	100 ml
<b>DNase/RNase-Free Water</b>	W1001-30 W1001-100	30 ml 100 ml
<b>DNase I</b> (lyophilized) (Supplied with DNA Digestion Buffer, 4 ml)	E1010 E1011	1 set (250 U) 1 set (1500 U)
<b>ZR-96 MagStand</b>	P1005	1
<b>Collection Plate</b> (capacity 1.2 ml/well)	C2002	2 plates
<b>96-Well Block</b> (capacity 2 ml/well)	P1001-2	2 plates
<b>Elution Plate</b> (capacity 0.35 ml/well)	C2003	2 plates
<b>96-Well Plate Cover Foil</b>	C2007-2	2
<b>DNA/RNA Shield™</b> (2X concentrate)	R1200-25 R1200-125	25 ml 125 ml
<b>Proteinase K Set</b> (w/ Storage Buffer)	D3001-2-5 D3001-2-20	5 mg 20 mg

# Complete Your Workflow

- ✓ For tough-to-lyse samples in TRIzol, use ZR BashingBead Lysis Tubes:

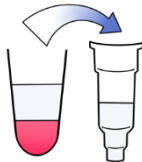
ZR BashingBead Lysis Tubes	
2.0 mm beads #S6003	For plant/animal tissue
0.1 + 0.5 mm beads #S6012	For microbes
0.1 + 2.0 mm beads #S6014	For microbes in tissue/insects

- ✓ The only **direct**, high-throughput and automatable RNA purification from sample lysates in TRIzol (DNase I Set included with all formats):



Direct-zol RNA kits	
Microprep #R2060-R2063	From 1 cell and up
Miniprep #R2050-R2053	Up to 50 ug RNA
Miniprep Plus #R2070-R2073	Up to 100 ug RNA
96-well #R2054-R2057	Spin-plate
MagBeads #R2100-R2105	Automatable (Tecan, Hamilton, Kingfisher, etc.)

- ✓ For RNA clean-up (purification) from the aqueous phase (e.g., TRIzol, TRI Reagent or similar) or from any enzymatic reaction (e.g., DNase I treated RNA):

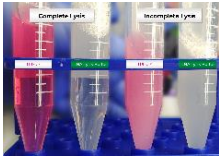


RNA Clean & Concentrator kit	
#R1013-R1014	DNase I Set included

- ✓ For NGS:

Zymo-Seq RiboFree Total RNA Library Prep kit	
#R3000	12 preps
#R3003	96 preps

# Troubleshooting Guide

Problem	Possible Causes and Suggested Solutions
<b>Low recovery</b>	<p>Incomplete lysis and/or high-mass input:</p> <ul style="list-style-type: none"> <li>- If precipitation occurs (upon adding ethanol to the lysate) or if the lysate is extremely viscous, increase the volume of TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent to ensure complete lysis and homogenization until lysate is transparent (see image).</li> </ul> 
<b>Low purity</b> <i>(A<sub>260</sub>/A<sub>230</sub> nm, A<sub>260</sub>/A<sub>280</sub> nm)</i>	<p>Incomplete lysis and/or cellular debris:</p> <ul style="list-style-type: none"> <li>- Increase the volume of TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar to ensure complete lysis and homogenization. Be sure to centrifuge any cellular debris and then process the cleared lysate.</li> </ul> <p>Washing of beads:</p> <ul style="list-style-type: none"> <li>- Shaking/Mixing: Mix well by pipetting up and down several times and/or by shaking (vortexing) at high speed. Make sure that the beads are resuspended throughout the bind, wash and elution steps.</li> </ul>
<b>Low yield</b>	<p>Sample input:</p> <ul style="list-style-type: none"> <li>- Too much input or incomplete lysis/homogenization can cause cellular debris to clog or overload the column and result in compromised RNA recovery. Use less input material and/or increase TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent.</li> </ul> <p>High-protein content (blood, plasma/serum, etc.)</p> <ul style="list-style-type: none"> <li>- Perform Proteinase K treatment to the sample prior to adding TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent (Sample preparation, page 6).</li> </ul> <p>Increase binding time:</p> <ul style="list-style-type: none"> <li>- At all binding steps, increase binding time for an additional ≥10 minutes (e.g., 30 minutes). Depending on the amount of biomass, more time may be required to allow RNA to be sufficiently bound to beads.</li> </ul>
<b>DNA contamination</b>	<p>To remove DNA:</p> <ul style="list-style-type: none"> <li>- Perform DNase I treatment post-purification (<a href="#">R1013, page 4</a>), then re-purify the treated sample.</li> <li>- For future preps, increase the volume of TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent to ensure complete lysis and homogenization of the sample.</li> </ul>
<b>RNA degradation</b>	<p>To prevent RNA degradation:</p> <ul style="list-style-type: none"> <li>- Immediately collect and lyse fresh sample into TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar reagent to ensure RNA stability. Homogenized samples in TRIzol<sup>®</sup>, TRI Reagent<sup>®</sup> or similar can be stored frozen for later processing.</li> </ul>

For technical assistance, please contact 1-888-882-9682 or email [tech@zymoresearch.com](mailto:tech@zymoresearch.com)

# Notes

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



## **100% satisfaction guarantee on all Zymo Research products, or your money back.**

Zymo Research is committed to simplifying your research with quality products and services. If you are dissatisfied with this product for any reason, please call 1(888) 882-9682.

---

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.

This product is for research use only and should only be used by trained professionals. It is not 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.

<sup>™</sup> Trademarks of Zymo Research Corporation

Direct-zol<sup>™</sup> product technologies are subject to U.S. and foreign patents or are patent pending. U.S. Patent Nos. 9,051,563 B2; and 9,206,469 B2 and foreign equivalents. Direct-zol<sup>®</sup> is a registered trademark of Zymo Research Corporation. Other trademarks: TRI Reagent<sup>®</sup>, TRIZol<sup>®</sup> and RNAzol<sup>®</sup> (Molecular Research Center, Inc.), QIAzol<sup>®</sup> (Qiagen GmbH), TriPure<sup>™</sup> (Roche, Inc.), TriSure<sup>™</sup> (Bioline Ltd.), RNAlater<sup>®</sup> (Ambion, Inc.), Bioanalyzer (Agilent Technologies, Inc.).





ZYMO RESEARCH

The **BEAUTY** of **SCIENCE** is to Make Things **SIMPLE**®



[tech@zymoresearch.com](mailto:tech@zymoresearch.com)



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



Toll Free: (888) 882-9682