Primerdesign™ Ltd

genesig® Easy

DNA/RNA Extraction Kit

50 extractions

Universal kit for isolation of DNA/RNA from food, water, clinical, plant, veterinary and other samples types.

GENESIG

Kits by Primerdesign

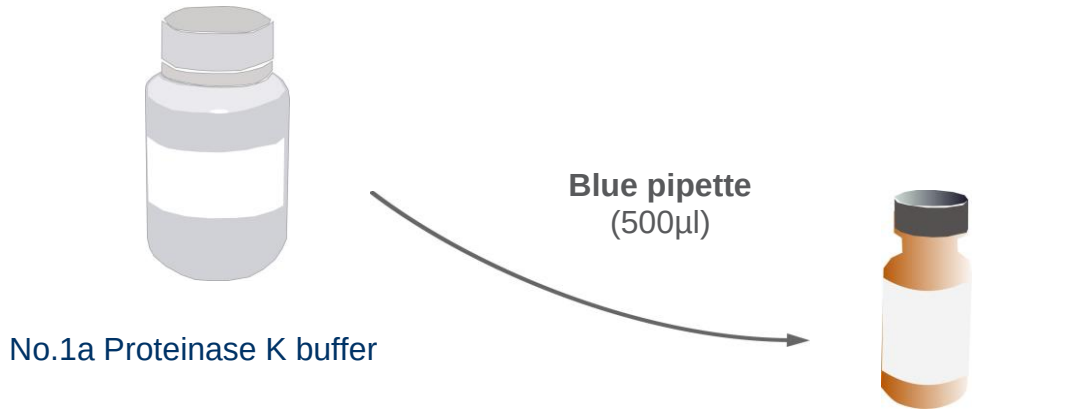
For general laboratory and research use only

Table of contents

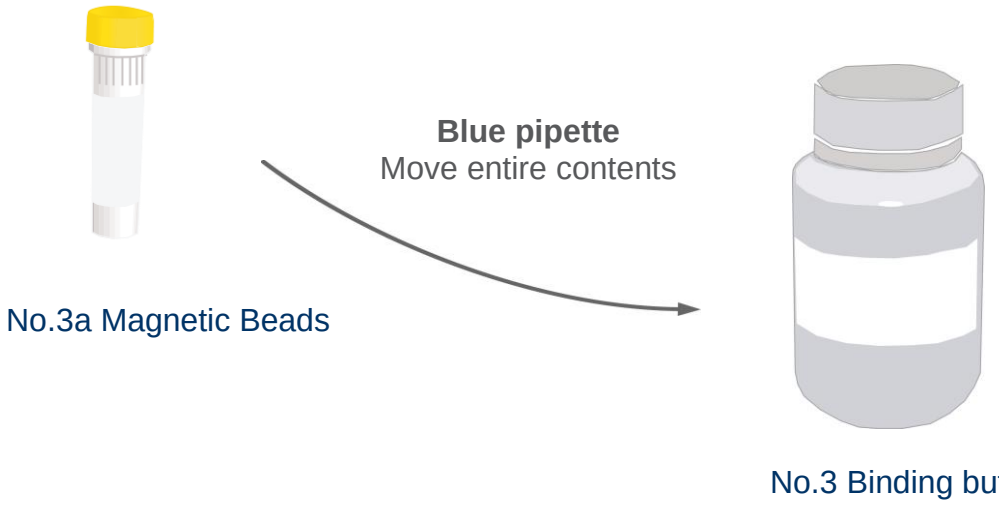
1. Quick guide

1.1 Quick guide – First steps when you open a new kit

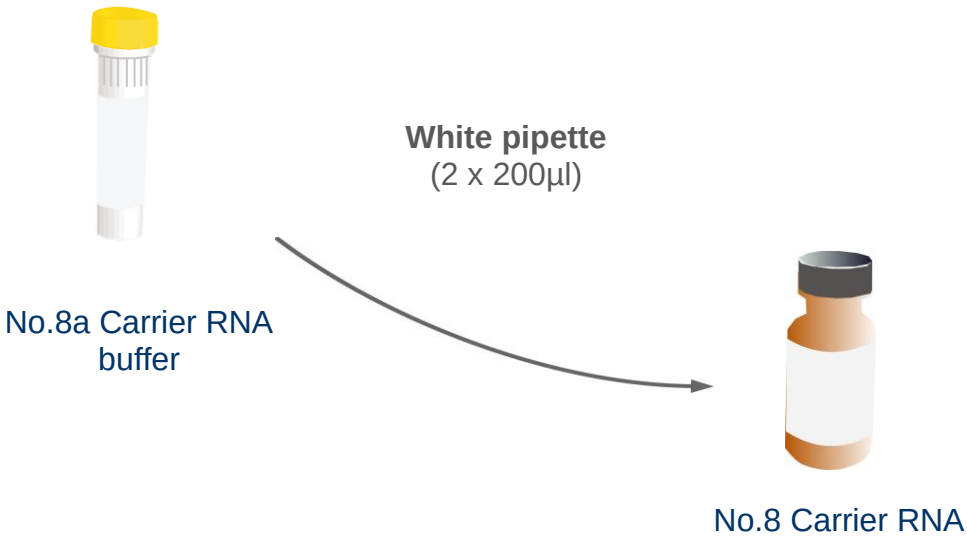
Upon opening a new genesig® Easy DNA/RNA extraction kit, a couple of components need to be mixed to make them ready to use.



Top tip
Proteinase K is stable at room temperature whilst lyophilised. However, once resuspended it should be stored at -20°C.



Top tip
Give tube No.3a a vigorous shake to resuspend the beads before transferring the entire contents in to bottle No.3



Top tip

Once the Carrier RNA has been resuspended, dispense into aliquots and store at -20°C. We recommend dispensing between 20µl-40µl per aliquot. Use the red pipette to transfer 20µl (2 x red pipette) or 40µl (4 x red pipette) into aliquots.

1.2 Quick guide – sample prep

Depending on your sample type you may need to perform a simple sample prep step to prepare for DNA/RNA extraction.

Meat/Food (for species testing) and plant extractions

Combine:

- Approximately 10-20mg of homogenised tissue (a match head in size)
- 500µl (Blue pipette) Sample Prep Solution
  Mix well with pipette
  Let large pieces settle out
  Use clear top layer of liquid as sample for DNA/RNA extraction

Tissue extractions (for target detection testing)

Sample prep and lysis stage are performed together. Combine:

- Approximately 10-20mg of homogenised tissue (a match head in size)
- 200µl (White pipette) Sample Prep Solution
  Then follow step 1 of DNA/RNA extraction
  Transfer liquid to a fresh tube
  Then continue extraction from step 2

Blood/Serum/Plasma/Other liquids (excluding oils)

No sample prep required. Add sample direct to step 1 of DNA/RNA extraction.

NB: This kit is not compatible with blood collection tubes containing Heparin/Sodium heparin

Dry Swab Samples

- Shake swab in 500µl (Blue pipette) Sample Prep Solution
  Wait 10-30 minutes
  Squeeze out the swab
  Discard swab
  Add prepared sample to Step1 of DNA/RNA extraction

Faeces/Soil

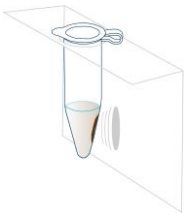
Combine:

- Approximately 10-20mg of faeces/soil (a match head in size) or 200µl (White pipette) if using liquid faeces.
- 500µl (Blue pipette) Sample Prep Solution
  Mix well with pipette
  Leave to settle out
  Use clear top layer of liquid for DNA/RNA extraction

If you are concerned that your sample doesn't fall within one of the above categories, is a highly processed or high-fat content sample then please contact us at enquiry@primerdesign.co.uk for advice on sample preparation.

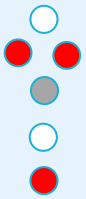
1.3 Quick guide – How to magnetise

The genesig Easy DNA/RNA extraction kit uses minute magnetic beads to bind to the DNA/RNA in your sample. A magnet is then used to pull the beads out of solution, so the DNA/RNA can be separated with ease.

How to magnetise	
Add beads to your sample	
Place your tube in the genesig magnetic separator rack. Immediately the beads will begin to gather on the wall of the tube	
After 1-2 minutes all the beads will be clumped in one spot.	
Use a pipette to remove the liquid whilst being careful not to disturb the beads.	

1.4 Quick guide – DNA/RNA extraction

See main body of handbook for detailed instructions of use, tips and troubleshooting

genesig Easy DNA/RNA extraction			
Step		Lab-in-a-box pipette	
1	Combine: • 200µl sample • 20µl Tube 1 • 5µl Tube 8* • 200µl Tube 2 • 10µl Internal extraction control DNA/RNA†		Shake Wait 15 minutes
2	Add • 500µl Tube 3		Shake Wait 5 minutes Magnetise! Remove all liquid
3	Add • 500µl Tube 4		Shake Wait 30 seconds Magnetise! Remove all liquid
4	Add • 500µl Tube 5		Shake Wait 30 seconds Magnetise! Remove all liquid
5	Add • 500µl Tube 6		Shake Wait 30 seconds Magnetise! Remove all liquid Air dry for 10 minutes with the lid open
6	Add • 200µl‡ Tube 7		Shake Wait 30 seconds Magnetise!
DNA/RNA is in the liquid!			

* Addition of Carrier RNA is only required if extracting RNA from your sample.
† If using a standard or advanced genesig kit instead of EASY genesig kit, use 4µl of the internal extraction control template.
‡ Between 50µl and 200µl of elution buffer can be used, see full protocol for details.

2. Components

2.1 Kit contents

genesig Easy	DNA/RNA Extraction Kit component	Amount supplied
	Sample Prep Solution	30ml
Tube No.1	Proteinase K (lyophilised)	2 x 6 mg
Tube No.1a	Proteinase K Buffer	8ml
Tube No.2*	**Lysis Buffer**	**15ml**
Tube No.3	genesig Easy Binding buffer/magnetic bead mix	40ml
Tube No.3a	genesig Easy Magnetic Beads	1.5ml
Tube No.4	Wash Buffer 1	40ml
Tube No.5	Wash Buffer 2	40ml
Tube No.6	80% Ethanol	30ml
Tube No.7	Elution Buffer	13ml
Tube No.8	Carrier RNA (lyophilised)	300µg
Tube No.8a	Carrier RNA buffer	0.5ml

3. Product information

3.1 The basic principle

The **genesig Easy Extraction** kit is designed for the isolation of DNA/RNA from a huge range of sample types. This kit provides reagents and magnetic beads for isolation of 50 samples of approximately 100–200µl. The procedure is based on the reversible adsorption of nucleic acids to magnetic beads under appropriate buffer conditions. Sample lysis is achieved by incubation with a Lysis Buffer containing chaotropic ions supported by Proteinase K digestion as and when required. The genesig Easy DNA/RNA Extraction kits are compatible with RNase but the lysis of the sample with Proteinase K has to take place before. For binding of nucleic acids to the magnetic beads, Binding Buffer and the genesig Easy Extraction Beads are added to the lysate. For RNA samples, carrier RNA should be added to the sample as this enhances the recovery of RNA when conducting extractions with the genesig Easy kit. It achieves this enhancement by binding any present nucleic acid molecules, stabilising them and promoting their binding to the genesig Easy magnetic beads. Carrier-RNA also protects against RNase-mediated degradation. It outcompetes native RNA for access to RNase active sites thus inhibiting RNase catalysis.
After magnetic separation, the magnetic beads are washed to remove contaminants and salts using Wash Buffers 1 and 2 and 80% ethanol. Residual ethanol from the previous wash step is removed by air-drying. Finally, highly pure DNA/RNA is eluted with low-salt Elution Buffer or water. Purified DNA/RNA can directly be used for downstream applications. The genesig Easy Extraction kits can be used either manually or automated on standard liquid handling instruments or automated magnetic separators.

3.2 Kit specifications

The **genesig Easy Extraction** kit is designed for rapid manual and automated small-scale preparation of DNA/RNA. The **genesig Easy Extraction** kit is suitable for use with cell-free bodily fluids such as serum or plasma samples, blood samples or homogenised tissue suspensions, food, broth, homogenised plant material suspensions and many other sample types. The kits are designed for use with genesig Easy magnetic separator or other magnetic separation systems. Manual time for the preparation of 16 samples is around 25 minutes. The purified DNA/RNA can be used directly as template for qPCR.

Automated extraction systems: genesig Easy Extractions allow easy automation on common liquid handling instruments or automated magnetic separators. The actual processing time depends on the configuration of the instrument and the magnetic separation system used. Typically, 96 samples can be purified in less than 30 minutes using the genesig Easy Extraction kits on the automation platform.

3.3 Handling of beads

Distribution of beads

A homogeneous distribution of the magnetic beads is essential for a high sample-to-sample consistency. Therefore, before adding the beads to the magnetic beads buffer, make sure that the beads are completely resuspended. Shake the storage bottle well or place it on a vortex for a short length of time. Premixing magnetic beads with the binding buffer allows easier homogenous distribution of the beads to individual samples.

Magnetic separation time

The genesig Easy magnetic separator has been designed to give ideal separation of the magnetic beads from the sample solution. Complete separation of beads from solution occurs within a 1-2 minute time frame. However, if using an alternative automated separation system, the attraction of the magnetic beads to the magnetic pins depends on the strength of the magnetic pins, the selected separation plate, distance of the separation plate from the magnetic pins, and the volume to be processed. The individual times for complete attraction of the beads to the magnetic pins should be checked and adjusted on each system. It is recommended to use the separation plates or tubes specified by the supplier of the magnetic separator.

Washing the beads

Washing the beads can be achieved by shaking or mixing. Ensure that the beads are completely detached from the tube wall. A complete wash is only possible once all beads are back in suspension. If using an automated separation system, mixing by shaker or magnetic mixing allows simultaneous mixing of all samples. This reduces the time and number of tips needed for the preparation. Resuspension by pipetting up and down, however, is more efficient than mixing by a shaker or magnetic mix.

3.4 Elution procedures

Purified DNA/RNA can be eluted directly with the supplied Elution Buffer. Elution can be carried out in a volume of ≥ 50µl. It is essential to cover the genesig Easy Beads completely with elution buffer during the elution step as the beads must be resuspended completely. The volume of dispensed elution buffer depends on the magnetic separation system (e.g. the position of the pellet inside the separation plate). For some separators, high elution volumes may be necessary to cover the whole pellet.

4. Storage conditions and preparation of working solutions

Attention:

Some of the Buffers contain chaotropic salt. Wearing gloves and goggles is recommended.

All components of the **genesig Easy Extraction** kit should be stored at room temperature (18–25°C) before resuspended. Please note the expiry date on the label applied to the outside of the extraction kit box, do not use the components past the date shown. The components proteinase K and carrier RNA once resuspended should be stored as per the instructions below.

All buffers are delivered ready-to-use.

Preparing the proteinase K:

Add 500µl of tube No.1a to both of the tubes labelled No.1 to resuspend the Proteinase K. Dissolved Proteinase K solution should be stored at –20°C ideally in small aliquots

Magnetic beads:

Give tube No.3a a vigorous shake to resuspend the beads before transfering the entire contents in to bottle No.3.

Preparing the carrier RNA:

Add 400µl of tube No.8a to the tube labelled No.8 to resuspend the carrier RNA. Dissolved carrier RNA solution should be stored at –20°C ideally in small aliquots.

5. Protocols

5.1 Preparation of sample materials

a) Meat/Food for species testing and Plant tissue samples

Homogenise tissue samples. Typically, 10–20 mg sample material can be homogenised in 500µl Sample Prep Solution by mixing with a pipette tip or using a bead-based homogeniser. If necessary, higher amounts of sample material can be used (up to 25 mg). It should be considered that the co-purified total nucleic acid may cause inhibition in the subsequent PCR assays. After homogenisation of the tissue, allow to settle or centrifuge and use up to 200µl clear supernatant for the extraction protocol. If using less than 200µl, adjust with Sample Prep Solution to a final volume of 200µl.

For isolation of RNA:

Tissue samples can also be disrupted in a buffer containing chaotropic salt and beta-mercaptoethanol or TCEP reducing agent.

b) Animal and plant tissue samples for target detection testing

(this protocol is also useful for tissue samples such as cooked meat products where DNA/RNA levels might be low)

Combine sample preparation and lysis stages. Homogenise 10–20 mg sample material in 200µl Sample Prep Solution and 200µl of lysis buffer (Tube 2) by mixing with a pipette tip or using a bead-based homogeniser. Add 20µl of proteinase K (Tube 1), 10µl of internal control and, if extracting RNA, also add 5µl of carrier RNA (Tube 8). Incubate at room temperature for 15 minutes. Transfer the lysate to a new Eppendorf tube leaving behind any particulate matter before adding the magnetic beads. Continue the extraction as normal following this step. If necessary, higher amounts of sample material can be used (up to 25 mg). It should be considered that the co-purified total nucleic acid may cause inhibition in the subsequent PCR assays.

c) Blood and serum/plasma samples

A sample volume of 100-200µl blood can be added directly to Step 1 of the protocol. Do not use higher volumes. When using less than 200µl samples, adjust with Sample Prep Solution to a final volume of 200µl.

d) Swab samples

Incubate the swabs with Sample Prep Solution, sodium chloride, or cell culture medium for between 10 and 30 minutes with occasional shaking. Remove and squeeze out the swab. Proceed with 200µl of the particle-free buffer or medium for the extraction protocol.

e) Faeces

Mix 1 volume of faeces (e.g. 200µl) with 500µl of Sample Prep Solution. Mix vigorously by shaking for 1 minute. Allow the particles to settle down or centrifuge with low speed (e.g. at 500 x *g*). For difficult to lyse bacteria, mechanical disruption or treatment using suitable glass beads may be required. Use up to 200µl supernatant for the extraction protocol.

For difficult to extract faecal samples use 1 volume of faeces (approximately 20mg or 200µl if using liquid faeces) and add 200µl of lysis buffer (Tube 2) directly to the sample. Add 20µl of proteinase K (Tube 1) and incubate at room temperature for 15 minutes. Transfer the lysate to a new flip cap tube leaving behind any particulate matter before adding the magnetic beads. Continue the extraction as normal following this step.

f) TRIzol® lysis

For sample materials such as semen, a TRIzol® lysis may be required. Homogenise 10–30 mg tissue with 1ml TRIzol® reagent to manufacturer's instructions. After phase separation by centrifugation, remove aqueous, colourless (upper) phase (approximately 400µl). For further processing, start with step 2 of the extraction protocol by mixing 500µl of the aqueous phase with 500µl magnetic bead/binding buffer mix (Tube 3).

5.2 Universal kit for isolation of DNA / RNA from food, water, clinical, plant, veterinary and other samples types

Preparation of sample material

A 200µl sample volume is recommended as standard.

Detailed protocol

This protocol is for manual use with a genesig magnetic separator and serves as a guideline for adapting the kit to robotic instruments.

1.	**Lyse sample** In a 1.5ml flip cap tube: • Dispense 200µl of sample. Add **200µl Lysis Buffer** to the reaction tube. • Add **20µl Proteinase K** • Add **10µl internal extraction control template.** • If performing a RNA extraction, add **5µl of carrier RNA.** • Mix well by repeated pipetting up and down and incubate at room temperature for 15 minutes • Following the lysis incubation, tap the sample down or spin down in a centrifuge if available to collect any sample from the lysis tube lids. For a DNA only extraction, perform a RNase treatment immediately after the lysis stage to remove RNA: • Add RNase*, approximately 12µg (> 120 U/mg) RNase is sufficient. • Incubate at room temperature for at least 10 minutes. • Continue to next step of extraction. *Please note RNase is not supplied as part of this extraction kit.
	Top tip Proteinase K and carrier RNA are stable at room temperature whilst lyophilised. However, once resuspended both components should be stored at -20°C.
2	**Bind nucleic acid to magnetic beads** Add **500µl magnetic beads/binding buffer** to the lysed sample. Mix well by shaking then wait 5 minutes *Be sure to mix the genesig Easy Extraction Beads well before removing them from the storage bottle. Vortex or shake the storage bottle briefly until a homogenous suspension has been formed.* Separate the magnetic beads from the sample by placing the tube in to the magnetic separator. Wait at least 2 minutes until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting. *Do not disturb the attracted beads while aspirating the supernatant.*

3	**Wash with Wash Buffer 1** Remove the tube from the magnetic separator. Add **500µl Wash Buffer 1** and resuspend the beads by shaking until the beads are resuspended completely. Then wait 30 seconds. Alternatively, resuspend beads completely by repeated pipetting up and down. Separate the magnetic beads from the sample by placing the tube in to the magnetic separator. Wait at least 2 minutes until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting. *Do not disturb the attracted beads while aspirating the supernatant*.
	Top tip During the magnetisation, gently invert tubes 1 or 2 times whilst attached to the magnetic separator to ensure any beads that have become isolated (i.e. stuck in the tube lid or on the sides of the tube) are collected back into solution and magnetised.
4	**Wash with Wash Buffer 2** Remove the tube from the magnetic separator. Add **500µl Wash Buffer 2** and resuspend the beads by shaking until the beads are resuspended completely. Then wait 30 seconds. Alternatively, resuspend beads completely by repeated pipetting up and down. Separate the magnetic beads from the sample by placing the tube in to the magnetic separator. Wait at least 2 minutes until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting. *Do not disturb the attracted beads while aspirating the supernatant.*
5	**Wash with 80% ethanol** Remove the tube from the magnetic separator. Add **500µl 80% ethanol** and resuspend the beads by shaking until the beads are resuspended completely. Then wait 30 seconds. Alternatively, resuspend beads completely by repeated pipetting up and down. Separate the magnetic beads from the sample by placing the tube in to the magnetic separator. Wait at least 2 minutes until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting. ***Do not disturb the attracted beads while aspirating the supernatant*.**
	Top tip During the magnetisation, gently invert tubes 1 or 2 times whilst attached to the magnetic separator to ensure any beads that have become isolated (i.e. stuck in the tube lid or on the sides of the tube) are collected back into solution and magnetised. Use pipette with 200µl tip to effectively remove all ethanol.
6	**Air-dry magnetic beads** Air-dry the magnetic bead pellet for 10 minutes at room temperature with the tube lid open. **The beads should be free from any visible liquid ethanol but not left to completely dry out.**

7	**Elute DNA/RNA** Remove the tube from the magnetic separator. Add desired volume of **Elution Buffer (50–200µl)** and resuspend the beads by shaking until the beads are resuspended completely. Then wait 30 seconds. If eluting in a volume <200µl, resuspend beads completely by repeated pipetting up and down for 1 minute instead of shaking. Separate the magnetic beads from the sample by placing the tube in to a magnetic separator. Wait at least 2 minutes until all the beads have been attracted to the magnet. Transfer the supernatant containing the purified DNA/RNA to a 0.5ml flip cap tube for storage or use in downstream applications. ***Do not disturb the attracted bead whilst removing supernatant.***

6. Using alternative magnetic systems

6.1 Using alternative magnetic separation systems

When using the **genesig Easy Extraction** kit, the use of the genesig Easy magnetic separator is recommended. Separation is carried out in individual micro-centrifuge tubes. However, the kit can also be used with other common separators.

Static magnetic pins

Separators with static magnetic pins: This type of separator is recommended in combination with a suitable microplate shaker for optimal mixing of the beads during the washing and elution steps. Alternatively, beads can be mixed in the buffer by pipetting up and down several times. For fully-automated use on liquid handling workstations, a gripper tool is required, the plate is transferred to the magnetic separator for separation of the beads and transferred to the shaker module for resuspension of the beads.

Movable magnetic systems

Separators with moving magnetic pins: Magnetic pins/rods are moved from one side of the well to the other and vice versa. The beads follow this movement and are thus pulled through the buffer during the wash and elution steps. Separation takes place when the system stops.

Automated separators

Separators with moving magnets: Magnetic beads are transferred into suitable plates or tubes. The beads are resuspended from the rod-covered magnets. Following binding, washing or elution the beads are collected again with the rod-covered magnets and transferred to the next plate or tube.

6.2 Adjusting the shaker settings

If using a plate shaker for the washing and elution steps, the speed settings must be adjusted carefully for each specific separation plate and shaker to prevent cross-contamination between wells. Proceed as follows:

Adjusting shaker speed for binding and wash steps:

Load 600µl of dyed water to the wells of the separation plate. Place the plate on the shaker and start shaking with a moderate speed setting for 30 seconds. Turn off the shaker and check the plate surface for small droplets of dyed water.

Increase speed setting, shake for an additional 30 seconds, and check the plate surface for droplets again.

Continue increasing the speed setting until you observe droplets on top of the separation plate. Reduce speed setting, check again, and use this setting for the washing steps.

Adjusting shaker speed for the elution step:

Load 100µl of dyed water to the wells of the collection plate and proceed as described above.

7. Safety instructions

The following components of the **genesig Easy Extraction** kit contains hazardous contents. A MSDS document detailing all hazardous and handling instructions can be found at www.genesig.com. Alternatively, email enquiries@primerdesign.co.uk to be sent a copy of the MSDS document.

Wear gloves and goggles and follow the safety instructions given in this section.

7.1 GHS classification

Harmful components do not need to be labelled with H and P phrases until 125ml or 125g.

Component	Hazard contents	GHS symbol	Hazard phrases
Proteinase K	Proteinase K, lyophilised 90-<100%	Danger	H315, H319, H334
Lysis buffer	guanidinium hydrochloride 36-<50 % + polyoxyethylene sorbitan monolaurate 10-<20 %	Warning	H302, H319
Binding buffer	Sodium perchlorate 15-<40 % + ethanol 35-<55 %	Warning	H226, H302
Wash buffers 1 and 2	Sodium perchlorate 15-<40 % + ethanol 20-<35 %	Warning	H226, H302
Ethanol	Ethanol 80%	Danger	H225, H319
Carrier RNA buffer	guanidinium thiocyanate 30-<45%	Warning	H302, H412

See appropriate precautionary phrases for handling the **genesig Easy Extraction kits**.

Hazard phrases	
H225	Extremely flammable liquid and vapour.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H412	Harmful to aquatic life with long lasting effects.

Precaution phrases	
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261sh	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264W	Wash with water thoroughly after handling
P273	Avoid release to the environment
P280sh	Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304 + 340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
P330	Rinse mouth.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P403 + P235	Store in a well-ventilated place. Keep cool.

8. Appendix

8.1 Troubleshooting

Problem	Possible cause and suggestions
Poor yield/low sensitivity	*Insufficient elution buffer volume* Beads pellet must be covered completely with elution buffer. *Insufficient performance of elution buffer during elution step* Remove residual buffers during the separation steps completely. Remaining buffers decrease the efficiency of the following wash and elution steps. *Beads dried out* Do not let the beads dry as this might result in lower elution efficiencies. *Aspiration of attracted bead pellet* Do not disturb the attracted beads while aspirating the supernatant, especially when the magnetic bead pellet is not visible in the lysate. *Aspiration and loss of beads* Time for magnetic separation too short or aspiration speed too high.
Low purity/ low sensitivity	*Insufficient washing procedure* Make sure that beads are resuspended completely during the washing procedure. If shaking is not sufficient to resuspend the beads completely mix by repeated pipetting up and down.
Poor performance of RNA in downstream applications	*Carry-over of ethanol from wash buffers* Be sure to remove all the 80% ethanolic wash solution from the final wash, as residual ethanol interferes with downstream applications. *Ethanol evaporation from wash buffers* Close buffer bottles tightly to avoid ethanol evaporation from bottles.
Carry-over of beads	*Time for magnetic separation too short* Increase separation time to allow the beads to be completely attracted to the magnet before aspirating any liquid from the well. *Aspiration speed too high (elution step)* High aspiration speed during the elution step may cause bead carry-over. Reduce aspiration speed for elution step.

8.2 Ordering information

Visit ***www.genesig.com*** for more detailed product information.

8.3 Product use restriction/warranty

Genesig Easy Extraction kit components are intended, developed, designed, and sold FOR RESEARCH PURPOSES ONLY, except, however, any other function of the product being expressly described in original PRIMERDESIGN product leaflets.

Primerdesign products are intended for GENERAL LABORATORY USE ONLY. Primerdesign products are suited for QUALIFIED PERSONNEL ONLY. Primerdesign products shall in any event only be used wearing adequate PROTECTIVE CLOTHING. For detailed information please refer to the respective Material Safety Data Sheet of the product. Primerdesign products shall exclusively be used in an ADEQUATE TEST ENVIRONMENT. Primerdesign does not assume any responsibility for damages due to improper application of our products in other fields of application. Application on the human body is STRICTLY FORBIDDEN. The respective user is liable for any and all damages resulting from such application.

DNA/RNA purification products of Primerdesign are suitable for *IN VITRO*-USES ONLY.

No claim or representation is intended for its use to identify any specific organism or for clinical use (including, but not limited to diagnostic, prognostic, therapeutic, or blood banking). It is rather in the responsibility of the user or - in case of resale of the products - in the responsibility of the reseller to inspect and assure the use of the DNA/RNA purification products of Primerdesign for a well-defined and specific application.

Primerdesign shall only be responsible for the product specifications and the performance range of Primerdesign products according to the specifications of in-house quality control, product documentation and marketing material.

Documentation stating specifications and other technical information can be found at www.genesig.com.

Primerdesign warrants to meet the stated specifications. Primerdesign´s sole obligation and the customer´s sole remedy is limited to replacement of products free of charge in the event products fail to perform as warranted. Supplementary reference is made to the general business terms and conditions of Primerdesign. Please contact us if you wish to get an extra copy.

There is no warranty for and Primerdesign is not liable for damages or defects arising in shipping and handling (transport insurance for customers excluded), or out of accident or improper or abnormal use of this product; defects in products or components not manufactured by Primerdesign, or damages resulting from such non- Primerdesign components or products.

Primerdesign makes no other warranty of any kind whatsoever, and SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES OF ANY KIND OR NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, AS TO THE SUITABILITY, REPRODUCTIVITY, DURABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, CONDITION, OR ANY OTHER MATTER WITH RESPECT TO PRIMERDESIGN PRODUCTS.

In no event shall Primerdesign be liable for claims for any other damages, whether direct, indirect, incidental, compensatory, foreseeable, consequential, or special (including but not limited to loss of use, revenue or profit), whether based upon warranty, contract, tort (including negligence) or strict liability arising in connection with the sale or the failure of Primerdesign products to perform in accordance with the stated specifications. This warranty is exclusive and Primerdesign makes no other warranty expressed or implied.

The warranty provided herein and the data, specifications and descriptions of this Primerdesign product appearing in Primerdesign published catalogues and product literature are Primerdesign´s sole representations concerning the product and warranty. No other statements or representations, written or oral, by Primerdesign´s employees, agent or representatives, except written statements signed by a duly authorised officer of Primerdesign are authorised; they should not be relied upon by the customer and are not a part of the contract of sale or of this warranty.

Product claims are subject to change. Therefore, please contact our Technical Service Team for the most up-to-date information on Primerdesign products. You may also contact your local distributor for general scientific information. Applications mentioned in Primerdesign literature are provided for informational purposes only. Primerdesign does not warrant that all applications have been tested in Primerdesign laboratories using Primerdesign products. Primerdesign does not warrant the correctness of any of those applications.

Last updated: 14/10/2014

Please contact:
Primerdesign Ltd
support@primerdesign.co.uk

Trademarks:

genesig® is a registered trademark of Primerdesign Ltd.
TRIzol® is a registered trademark of Molecular Research Center, Inc.