USER GUIDE

applied biosystems®
by life technologies™

PrepSEQ® Residual DNA Sample Preparation Kit

for use with:
resDNASEQ® Quantitative *E. coli* DNA kit
resDNASEQ® Quantitative Vero DNA kit

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About This Guide

Safety information

Note: For general safety information, see this Preface and Safety Appendix. When a hazard symbol and hazard type appear by a chemical name or instrument hazard, see the "Safety" Appendix for the complete alert on the chemical or instrument.

Safety alert words

Four safety alert words appear in Life Technologies Corporation user documentation at points in the document where you need to be aware of relevant hazards. Each alert word—**IMPORTANT, CAUTION, WARNING, DANGER**—implies a particular level of observation or action, as defined below:

IMPORTANT! – Indicates information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

CAUTION! – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

WARNING! – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

DANGER! – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

SDSs

The SDSs for any chemicals supplied by Life Technologies Corporation or Ambion are available to you free 24 hours a day. For instructions on obtaining SDSs, see the Safety Appendix on page 21.

IMPORTANT! For the SDSs of chemicals not distributed by Life Technologies Corporation or Ambion contact the chemical manufacturer.

How to use this guide

Text conventions

This guide uses the following conventions:

- **Bold** text indicates user action. For example:

  Type **0**, then press **Enter** for each of the remaining fields.
- *Italic* text indicates new or important words and is also used for emphasis. For example:

  Before analyzing, *always* prepare fresh matrix.
- A right arrow symbol (▸) separates successive commands you select from a drop-down or shortcut menu. For example:

  Select **File ▸ Open ▸ Spot Set**.

  Right-click the sample row, then select **View Filter ▸ View All Runs**.

User attention words

Two user attention words appear in Life Technologies Corporation user documentation. Each word implies a particular level of observation or action as described below:

Note: – Provides information that may be of interest or help but is not critical to the use of the product.

IMPORTANT! – Provides information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

PrepSEQ® Residual DNA Sample Preparation Kit Protocol

Product overview

The PrepSEQ® Residual DNA Sample Preparation Kit extracts host-cell DNA from products produced in cell lines such as *E. coli* and Vero. The kit uses chemical lysis and magnetic beads to efficiently extract genomic DNA from diverse sample types, including samples that contain high protein and low DNA concentration.

To assure accurate quantitative results, Applied Biosystems protocols call for true triplicate sample preparation and analysis. Extract each test sample in triplicate and perform a single PCR reaction for each extraction. The instrument software calculates a mean quantity. You can calculate the percent coefficient of variation from this data (SD/Mean Quantity × 100 = % CV). Based on this calculation, you can then assign a % CV to ensure accurate results from each sample tested.

After extraction, you can quantitate the DNA to determine the level of host-cell DNA contamination in the product. For quantitation of host-cell line residual DNA, Applied Biosystems recommends use of the resDNASEQ® Quantitative DNA kits as described in the *resDNASEQ® Quantitative DNA Kits Protocol* (Part no. 4415260).

Required materials and preparation

Kit contents and storage

The PrepSEQ® Residual DNA Sample Preparation Kit contains the PrepSEQ® Nucleic Acid Extraction Kit (Part no. 4400799), which contains three component boxes, and the PrepSEQ® Residual DNA Sample Preparation Kit (Part no. 4399042). Kit components include:

Reagent	Description	Storage	Part Number
PrepSEQ® Nucleic Acid Extraction Kit (Box 1)			**4400793**
Lysis Buffer	2 bottles, 50 mL/bottle	Store at room temperature	4400659
Binding Solution (Isopropanol)	1 empty bottle	NA	4400789
Wash Buffer Concentrate	2 bottles, 26 mL/bottle	Store at room temperature	4400783
Elution Buffer	1 bottle, 25 mL	Store at room temperature	4400784
Proteinase K (PK) Buffer	1 bottle, 50 mL	Store at room temperature	4400787
PrepSEQ® Nucleic Acid Extraction Kit (Box 2)			**4400795**
Magnetic Particles	2 tubes, 1.5 mL/tube	Store at 2–8°C.	4401405

Reagent	Description	Storage	Part Number
PrepSEQ® Nucleic Acid Extraction Kit (Box 3)			**4400675**
Proteinase K	1 tube, 20 mg/mL, 1.25 mL	Store at or below –20°C	4403958
PrepSEQ® Residual DNA Sample Preparation Kit			**4399042**
Proteinase K	1 tube, 20 mg/mL, 1.25 mL	Store at or below –20°C	4403958
Yeast tRNA	1 tube, 10 mg/mL, 0.5 mL	Store at or below –20°C	4404626
Glycogen	2 tubes, 5 mg/mL, 1.0 mL/tube	Store at or below –20°C	4404627

IMPORTANT! White precipitate occasionally forms in the magnetic particles tube. Before each use, incubate the tube containing the magnetic particles at 37°C for 10 minutes, then vortex the tube at setting #7 to completely resuspend the particles.

Automation instrument, plastics, and accessories

MagMAX™ Express-96 DW instrument (Part no. 4456933) accessories include:

Item	Source or part number
MagMAX™ Express-96 DW plate	4388476
MagMAX™ Express-96 DW well tip combs	4388487
MagMAX™ Express-96 DW magnetic head	4388435
MagMAX™ Express-96 DW standard plates	4388475
Magnetic Stand-96	AM10027
Vortex Adapter-60, for use with the Vortex-Genie	AM10014

Materials not included in the kit

Materials that are required for use of, but are not included in, the PrepSEQ® Residual DNA Sample Preparation Kit include:

Item	Source or part number
Equipment	
Block heater for use with 2-mL tubes. Manual DNA extraction involves two incubations at different settings, so two heaters may be convenient.	Major laboratory supplier (MLS)
Magnetic stand, 16-position	4457858
Benchtop microcentrifuge for 1.5-mL and 2-mL tubes	MLS
Vortex-Genie 2T Mixer	VWR 14216-188, VWR 14216-186
Vortex Adapter-60, for use with the Vortex-Genie	AM10014
Consumables	
Disposable gloves	MLS
Aerosol-resistant micropipette tips	MLS

Item	Source or part number
Pipetman® Pipettors, P1000, P200, P20 and P10: • Positive-displacement • Air-displacement • Multichannel	MLS
Pipettes	MLS
Microcentrifuge tubes, nonstick, RNase-free, 1.5-mL, 1 box (250 tubes/box)	AM12450
Safe-Lock PCR clean microcentrifuge tubes, round-bottom, 2-mL	VWR 62111-754
Reagents	
Ethanol, 95% **IMPORTANT!** Do not use denatured ethanol. It contains components that are not compatible with the protocol.	MLS
Isopropanol, 100%	MLS
5 M NaCl and 1 N NaOH solutions	MLS
Hydrochloric acid (HCl)	MLS
PBS solution, 1X, pH 7.4, free of Mg and Ca (if needed to dilute samples)	Ambion AM9624

Safety Hazards

For all chemicals, read the Safety Data Sheet (SDS) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Reagent preparation

Before you use the PrepSEQ® Residual DNA Sample Preparation Kit, prepare the following solutions:

PrepSEQ® Binding Solution:

1. Add 30 mL of 100% isopropanol to the Binding Solution bottle.
2. Label the bottle to indicate that it contains isopropanol, then store the bottle at ambient temperature.

PrepSEQ® Wash Buffer Concentrate:

1. Add 74 mL of 95% ethanol to the bottle that is labeled PrepSEQ® Wash Solution Concentrate, then mix completely.
2. Label the bottle to indicate that it contains ethanol, then store the bottle at ambient temperature.

Proteinase K/Proteinase K Buffer mix:

- Prepare a mix that contains Proteinase K and Proteinase K buffer for the total number of samples to be processed.
- Include a 10% overage to account for pipetting losses. For example, if you have 9 samples, create a mix for 10 samples as shown in the following table. Then add 70 µL of the mix per 100 µL of sample.

Component	1 reaction (per 100 µL of sample)	10 reactions (per 100 µL of sample)
Proteinase K	10 µL	100 µL
Proteinase K buffer	60 µL	600 µL

Magnetic particles:

1. Immediately before using, incubate the tube containing the magnetic particles at 37°C for 10 minutes.
2. If necessary, use a P1000 Pipetman® to agitate the particles at the bottom of the tube before vortexing. Small aggregations of particles will reduce performance.
3. Vortex the tube at setting #7 to completely resuspend the particles.

Lysis Solution Mix of Lysis Buffer, tRNA, and glycogen, prepared immediately prior to starting sample preparation:

Prepare a fresh mixture according to the following table.

Use 360 µL of the mix for sample preparation per 100 µL of sample.

Reagent	Volume (µL)
Glycogen (5 mg/mL)	180 µL
tRNA (10 mg/mL)	4 µL
Lysis buffer	7600 µL
Total	**7784 µL**

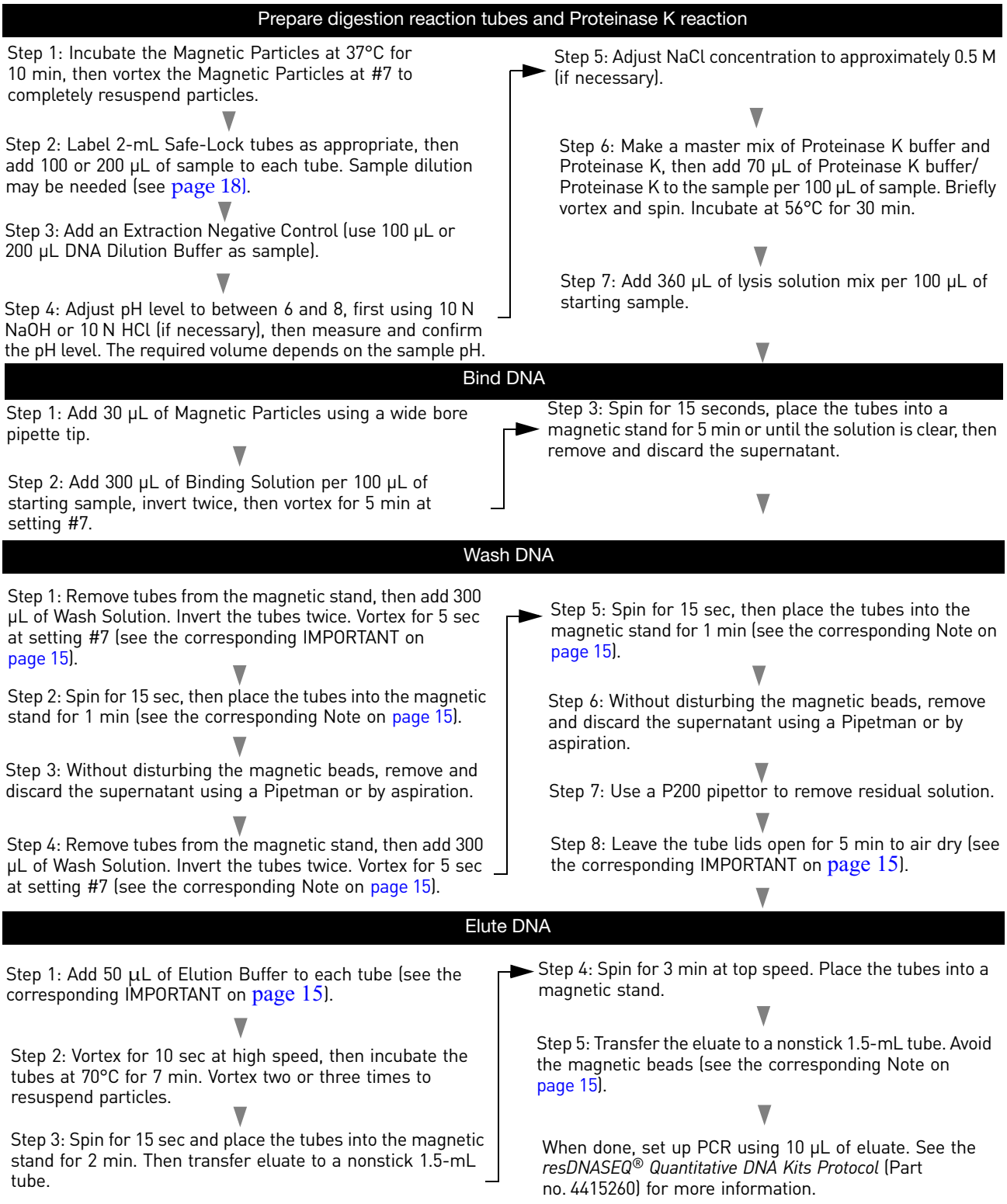
Extract Host-Cell DNA

To extract host-cell DNA from products that are produced in cell lines such as *E. coli* or Vero, use the following workflow.

For all chemicals, read the Safety Data Sheet (SDS) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Workflow for manual residual DNA extraction

The manual extraction workflow is shown below. For details, go to page 14.



Workflow for automated *E. coli* and Vero DNA extraction

The automated extraction workflow is shown below. For details, go to page 16.

Prepare the plates

Prepare the Lysis, Wash 1, Wash 2, Elution and Comb loading plates according to the table on page 16.

Select the instrument protocol

Select the program labeled **PrepSEQ_resDNA_NE_30** from the MagMax™ Express-96.

Load the plates

Step 1: Press **START**, then position the plates according to the Display window instructions.

Step 2: Place the plates in the instrument and load them in the following order, pressing **START** to move the turntable for each plate:

Comb loading plate:
a. Elution plate with 100 µL or 200 µL elution buffer
b. Wash 2 plate with 300 µL wash buffer
c. Wash 1 plate with 300 µL wash buffer
d. Lysis plate

Prepare samples for digestion

Step 1: Add 100 µL of sample to a well of the 96 deep-well plate. Adjust pH level to between 6 and 8, first using 10 N NaOH or 10 N HCl (if necessary), then measure and confirm the pH level.

Step 2: (Optional) Add 10 µL of 5 M NaCl if the salt concentration of the sample is lower than 0.5 M (see page 17).

Step 3: Make a master mix of Proteinase K buffer and Proteinase K, then add 70 µL to each sample. Vortex and spin briefly. Incubate the mix at 56°C for 30 minutes.

Step 4: Place the plate in the processor, then press **START** to begin the lysis process.

The instrument mixes the samples for 10 seconds at fast speed, then incubates the samples at 57°C for 30 minutes, mixing at slow speed.

Prepare the lysis and bind the DNA

Step 1: Incubate the Magnetic Particle suspension at 37°C for 10 min, then vortex for 2 min or until completely suspended.

Step 2: Remove the plate from the instrument, then add 360 µL of Lysis Solution using a multi-channel pipette. Pipet up & down two times to mix.

Step 3: Add 30 µl of Magnetic Particle suspension to the sample, then shake the plate gently to mix.

Step 4: Add 300 µl of Binding Solution using an 8-channel pipette, then pipet up & down two times.

Step 5: Place the plate back into the instrument loading position, then press **START** to begin binding.

The instrument mixes the beads for 15 min (superfast speed), collects beads (45 counts), then washes and elutes the DNA.

Measure the eluate volume

Step 1: Place the Elution plate on a Magnetic Stand-96 to attract residual particles to the bottom of the wells.

Step 2: Use a pipette to measure the eluate volume from several wells (eluate volumes can be heterogeneous). The average eluate volume is used to calculate recovery efficiency.

Step 3: Use a multi-channel pipette to carefully transfer 10 µL of eluate to the PCR reaction plate. Do not touch particles.

Manual protocol for residual DNA extraction

1. Prepare the digestion reaction tubes and Proteinase K reaction.
    a. Set a block heater to 56°C.
    b. Incubate the Magnetic Particles at 37°C for 10 minutes, then vortex the Magnetic Particles at setting #7 until resuspension is complete.
    c. Label 2-mL Safe-Lock tubes as appropriate, then add 100- or 200-µL samples into each tube.

        Note: Test samples from the early purification process often contain levels of DNA that are above the highest point of the residual DNA assay standard curve. See "Dilute DNA samples if necessary" on page 18. Alternatively, make dilutions of the extracted DNA before running the PCR reaction.
    d. Add an Extraction Negative Control (use 100 µL or 200 µL DNA Dilution Buffer as sample).
    e. Measure the pH of the solution with pH paper. If necessary, add sufficient 10 N NaOH or 10 N HCl to adjust the pH of the solution to between 6 and 8.

        Note: Alternatively, adjust the pH by adding the 10 N NaOH or 10 N HCl before preparation, using an appropriately smaller amount. For example, if 20 µL of 10 N NaOH adjusts the pH of 1 mL of sample, then add 2 µL per 0.1 mL of 10 N NaOH before preparing the sample.
    f. Adjust salt concentration in the samples with 5 M NaCl to approximately 0.5 M if the salt concentration is lower than 0.5 M. For example, add 10 µL of 5 M NaCl per 100 µL of sample.
    g. Make a master mix of Proteinase K buffer and Proteinase K, then add 70 µL of Proteinase K buffer/Proteinase K per 100 µL of sample. Briefly vortex and spin. Incubate at 56°C for 30 minutes.

        If only one block heater is available, after incubation reset it to 70°C for the elution step.
    h. Add 360 µL of freshly made Lysis Solution Mix per 100 µL of starting sample (see "Reagent preparation" on page 9).
2. Bind the DNA.

    For all chemicals, avoid contact with (skin, eyes, and/or clothing). Read the SDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.
    a. Add 30 µL of the Magnetic Particles to the 100- or 200-µL sample using a wide-bore pipette tip.
    b. Add 300 µL of the Binding Solution per 100 µL of starting sample, close the caps and invert the tubes twice to mix, then vortex the tubes for 5 minutes at setting #7.
    c. Quick-spin the tubes in a microcentrifuge for 15 seconds to pellet the magnetic particles, then place the tubes in the magnetic stand and let the tubes stand for 5 minutes or until the solution is clear. Without disturbing the magnetic beads, remove the supernatant using a Pipetman or by aspiration.
3. Wash the DNA.

a. Remove the tubes from the magnetic stand, then add 300 µL of Wash Solution to the tubes. Invert the tubes back and forth twice. Vortex the tubes for 5 seconds at room temperature, at setting #7.

IMPORTANT! If the magnetic particles stick to the tube wall, flush gently with the Wash Solution to detach the particles.

b. Quick-spin the tubes in a microcentrifuge for 15 seconds, then place the tubes in the magnetic stand and let the tubes stand for 1 minute.

Note: The magnetic particles with the bound DNA are magnetically captured after approximately 1 minute.

c. Without disturbing the magnetic beads, remove the supernatant using a Pipetman or by aspiration.

d. Remove tubes from the magnetic stand, then add 300 µL of Wash Solution to the tube. Invert the tubes back and forth twice. Vortex the tubes for 5 seconds at room temperature, at setting #7.

IMPORTANT! If the magnetic particles stick to the tube wall, flush gently with the Wash Solution to detach the particles.

e. Quick-spin the tube in a microcentrifuge for 15 seconds, then place the tubes in the magnetic stand and let the tubes stand for 1 minute.

Note: The magnetic particles with the bound DNA are magnetically captured after approximately 1 minute.

f. Without disturbing the magnetic beads, remove the supernatant using a Pipetman or by aspiration.

g. Use a P200 to remove the residual solution from the bottom of the tube.

h. With the tube lid open, air-dry the magnetic particles pellet in the magnetic stand for 5 minutes at room temperature.

IMPORTANT! Air-drying removes ethanol from the Wash Solution. Ethanol decreases recovery and inhibits PCR.

4. Elute the DNA.

a. Add 50 µL of Elution Buffer to each tube containing magnetic particles that have bound DNA.

IMPORTANT! The magnetic particles may be difficult to detach from the tube wall. Place the tube in the microcentrifuge with the magnetic particles pellet oriented toward the center, then spin the tube for 30 seconds to detach the magnetic particles from the tube wall into the Elution Buffer. If the magnetic particles are difficult to resuspend, use a P200 to gently pipet up and down several times. Be careful not to let the magnetic particles stick inside the pipette tip.

b. Vortex the tubes for 10 seconds at high speed, then incubate the tubes at 70°C for 7 minutes. Vortex the tubes two to three times during the incubation to help resuspension.

c. Centrifuge the tubes in a microcentrifuge for 15 seconds, place the tubes in the magnetic stand and let the tubes stand for 2 minutes. Then transfer the liquid phase containing the eluted DNA to a new nonstick 1.5-mL microcentrifuge tube.

   Note: The magnetic particles are magnetically captured in approximately 1 minute. DNA is in the eluate.

d. Centrifuge the tube at top speed (>15,000 × g) for 3 minutes to pellet the residual magnetic particles, then place the tube in the magnetic stand and let the tube stand for 1 minute.

e. Transfer the liquid phase containing the eluted DNA to the nonstick 1.5-mL microcentrifuge tube without disturbing the magnetic particles. Use 10 µL of the eluate in the real-time PCR.

   Note: Magnetic particles can inhibit PCR.

When you finish the sample extraction procedure, refer to the *resDNASEQ® Quantitative DNA Kits Protocol* (Part no. 4415260) to set up PCR for DNA quantitation.

Automated protocol for residual DNA extraction

You can use the MagMAX™ Express automation platform to automate the extraction of host-cell line residual DNA. Perform the steps in the following protocol for automated extraction. For all chemicals, read the Safety Data Sheet (SDS) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Prepare for automated sample preparation of *E. coli* and Vero DNA

1. Prepare the plates.

Plate name	Plate type	Sample or buffer added
Lysis	96 deep-well plate	100 µL sample, 60 µL PK buffer, 10 µL PK
Wash 1	96 deep-well plate	300 µL Wash buffer
Wash 2	96 deep-well plate	300 µL Wash buffer
Elution	96 deep-well plate	100 or 200 µL Elution buffer
Comb loading plate	96 deep-well tip comb combined with 96 standard plate	—

2. Select the instrument protocol.

   Select the program labeled **PrepSEQ_ResDNAv1** from the MagMax™ Express-96.

3. Load the plates.

   Load plates into the instrument, in the order listed here. After loading each plate, press **START** to move the turntable.

   a. Comb loading plate

   b. Elution plate with 100 µL or 200 µL buffer

   c. Wash 2 plate with 300 µL wash buffer

   d. Wash 1 plate with 300 µL wash buffer

e. Lysis plate

4. Prepare samples for digestion.

   a. Add 100 µL of sample to a well of the 96 deep-well plate. If necessary, adjust pH level using 10 N NaOH or 10 N HCl (optimum range is 6 to 8), then measure to confirm the pH level. If necessary, centrifuge the plate at 1000 rpm for 1 minute, in a regular bench-top microfuge, to spin down the solution on the wall.

      Optional: Add 10 µL of 5 M NaCl if the salt concentration of the sample is lower than 0.5 M.

      Note: Test samples from the early purification process often contain levels of DNA that are above the highest point of the residual DNA assay standard curve. See "Dilute DNA samples if necessary" on page 18. Alternatively, make dilutions of the extracted DNA before running the PCR reaction.

   b. Make a master mix of Proteinase K buffer and Proteinase K, then add 70 µL to each sample. Briefly vortex, then briefly spin the master mix. Incubate the mix at 56 °C for 30 minutes.

   c. Place the plate in the processor, then press **START** to begin the lysis process.

      The instrument mixes the samples for 10 seconds at fast speed, then incubates the samples at 57°C for 30 minutes, mixing at slow speed. Proceed to step 5a while the samples incubate.

5. Prepare the lysis and bind the DNA.

   a. Incubate the Magnetic Particle suspension at 37°C for 10 minutes, then vortex for 2 minutes or until completely suspended.

   b. Remove the plate from the instrument, then add 360 µL of Lysis Solution using an 8-channel pipette. (The Lysis Solution will be freshly supplemented with Glycogen and with Yeast tRNA at final concentrations of 8 µg/µL and 10 µg/µL, respectively, as described on page 11). Pipet up and down two times to mix.

   c. Add 30 µl of Magnetic Particle suspension to the sample, then shake the plate gently to mix.

   d. Add 300 µl of Binding Solution using an 8-channel pipette, then pipet up and down three times to mix.

   e. Place the plate back into the instrument loading position, then press **START** to begin binding.

   The instrument mixes the beads for 15 minutes (superfast speed), collects beads (45 counts), then washes and elutes the DNA. The comb with beads will automatically be washed in the Wash 2 plate and placed on the comb loading plate. Then the Elution plate will be automatically placed into its loading position and the eluates will be ready for analysis.

6. Measure the eluate volume.

   a. Place the Elution plate on a Magnetic Stand-96 to attract residual particles to the bottom of the wells.

   b. Use a pipette to measure the eluate volume from several wells (eluate volumes can be homogeneous). The average eluate volume is used to calculate recovery efficiency.

c. Use a multi-channel pipette to carefully transfer 10 µL of eluate into the PCR reaction plate for the real-time PCR assay. Do not touch the particles.

Dilute DNA samples if necessary

Test samples from the early purification process often contain levels of DNA that are above the highest point of the residual DNA assay standard curve. You must dilute these samples (from 1:100 up to 1:10,000) prior to PrepSEQ® Residual DNA sample preparation.

Diluting samples in water is often not efficient because the PrepSEQ® Residual DNA Sample Preparation Kit protocol is optimized for highly efficient recovery of DNA from complex mixtures of proteins, buffer, and salts.

To rectify this situation, dilute test samples prior to DNA extraction and purification with a solution of 1× PBS (pH 7.4; free of Mg and Ca) plus 0.5 M NaCl. 1× PBS can be made by diluting Ambion 10 ×PBS (Part no. AM9624).

If the sample is being diluted, use the sample dilution buffer as the negative process control instead of water.

Alternatively, dilute extracted DNA before running the PCR reaction.

Troubleshooting

Observation	Possible cause	Action
Poor extraction efficiency (low yields)	Ethanol is in the Wash Solution (step h on page 15).	Thoroughly air-dry the magnetic particles pellet in the magnetic stand for 5 minutes at room temperature.
	Magnetic particles are attached too tightly to the tube wall during the elution (step a on page 15).	Place the tube in the microcentrifuge with the magnetic particles pellet oriented toward the center. Spin the tube for 30 seconds to detach the magnetic particles from the tube wall into the Elution Buffer.
	Magnetic particles are difficult to resuspend during the elution (step b on page 15).	Incubate the pellets at 70°C for 7 minutes. Vortex the tubes three times during incubation to help resuspension.
	Formation of precipitate in magnetic particles (page 16).	Incubate magnetic particles at 37 °C for 10 minutes, then vortex the magnetic particles at setting #7 for 30 seconds to completely resuspend the particles.
Particles no longer produce consistent results (fine brown sandy particles and brown color in the supernatant)	Samples have low pH (step e on page 14).	Measure the pH of the sample and adjust the pH to between 6 and 8.
	Magnetic particles were stored at -20°C ("Kit contents and storage", "Magnetic Particles" on page 7).	Order new materials and store them at 4°C.

Safety Appendix

This appendix covers:

Chemical safety

Chemical hazard warning

WARNING! CHEMICAL HAZARD. Before handling any chemicals, refer to the Safety Data Sheet (SDS) provided by the manufacturer, and observe all relevant precautions.

WARNING! CHEMICAL HAZARD. All chemicals in the instrument, including liquid in the lines, are potentially hazardous. Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.

WARNING! CHEMICAL HAZARD. Four-liter reagent and waste bottles can crack and leak. Each 4-liter bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

WARNING! CHEMICAL STORAGE HAZARD. Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

Chemical safety guidelines

To minimize the hazards of chemicals:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. (See "About SDSs" on page 22.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.

- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

About SDSs

Chemical manufacturers supply current Safety Data Sheets (SDSs) with shipments of hazardous chemicals to new customers. They also provide SDSs with the first shipment of a hazardous chemical to a customer after an SDS has been updated. SDSs provide the safety information you need to store, handle, transport, and dispose of the chemicals safely.

Each time you receive a new SDS packaged with a hazardous chemical, be sure to replace the appropriate SDS in your files.

Obtaining SDSs

The SDS for any chemical supplied by Life Technologies Corporation is available to you free 24 hours a day. To obtain SDSs:

1. Go to **www.appliedbiosystems.com**, click **Support**, then select **SDS**.
2. In the Keyword Search field, enter the chemical name, product name, SDS part number, or other information that appears in the SDS of interest. Select the language of your choice, then click **Search**.
3. Find the document of interest, right-click the document title, then select any of the following:
   - **Open** – To view the document
   - **Print Target** – To print the document
   - **Save Target As** – To download a PDF version of the document to a destination that you select

Note: For the SDSs of chemicals not distributed by Applied Biosystems, contact the chemical manufacturer.

Chemical waste safety

Chemical waste hazards

WARNING! HAZARDOUS WASTE. Refer to Safety Data Sheets (SDSs) and local regulations for handling and disposal.

WARNING! CHEMICAL WASTE HAZARD. Wastes produced by Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death.

WARNING! CHEMICAL STORAGE HAZARD. Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

Chemical waste safety guidelines

To minimize the hazards of chemical waste:

- Read and understand the Safety Data Sheets (SDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Handle chemical wastes in a fume hood.
- After emptying a waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Waste disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

IMPORTANT! Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Biological hazard safety

General biohazard

WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective equipment, which includes but is not limited to: protective eyewear, face shield, clothing/lab coat, and gloves. All work should be conducted in properly equipped facilities using the appropriate safety equipment (for example, physical containment devices). Individuals should be trained according to applicable regulatory and company/institution requirements before working with potentially infectious materials. Read and follow the applicable guidelines and/or regulatory requirements in the following:

- U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* found at **http://www.cdc.gov/biosafety/publications/index.htm**.
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.
- Additional information about biohazard guidelines is available at: **www.cdc.gov**

Chemical alerts

General alerts for all chemicals

Avoid contact with (skin, eyes, and/or clothing). Read the SDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Documentation

Related documents

For additional documentation see "How to obtain support" below.

- For brief instructions on using the PrepSEQ® Residual DNA Sample Preparation Kit, see the *PrepSEQ Residual DNA Sample Preparation Kit Quick Reference* (Part no. 4468125)
- For information on new assays and updated 7500 product documentation, go to **www.microseq.com**
- For information on performing PCR after sample extraction, refer to the *resDNASEQ® Quantitative DNA Kits Protocol* (Part no. 4460662).
- For information on MagMAX™ Express 96 DW instrument, see the Applied Biosystems *MagMAX™ Express 96 User Manual* (Part no. N07849).

Portable document format (PDF) versions of this guide and the document shown above are available at **www.appliedbiosystems.com**

Note: To open the documentation available from the Life Technologies Corporation web site, use the Adobe® Acrobat® Reader® software available at **www.adobe.com**

How to obtain support

For the latest services and support information for all locations, go to **www.appliedbiosystems.com**.

At the Life Technologies Corporation web site, you can:

- Access worldwide telephone and fax numbers to contact Life Technologies Corporation Technical Support and Sales facilities.
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support
- Order Life Technologies Corporation user documents, SDSs, certificates of analysis, and other related documents
- Download PDF documents
- Obtain information about customer training
- Download software updates and patches

Headquarters
5791 Van Allen Way | Carlsbad, CA 92008 USA | Phone +1 760 603 7200 | Toll Free in USA 800 955 6288
For support visit www.appliedbiosystems.com/support

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