

TECHNICAL MANUAL

# Automated Genomic DNA Isolation Using the Tecan Freedom EVO<sup>®</sup>-HSM Workstation

Instructions for Use of Products  
XAT1000, XAT1005 and A2751



# Automated Genomic DNA Isolation Using the Tecan Freedom EVO<sup>®</sup>-HSM Workstation

All technical literature is available at: [www.promega.com/protocols/](http://www.promega.com/protocols/)  
 Visit the web site to verify that you are using the most current version of this Technical Manual.  
 E-mail Promega Technical Services if you have questions on use of this system: [techserv@promega.com](mailto:techserv@promega.com)

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## 1. Description

The Tecan Freedom EVO<sup>®</sup>-HSM Workstation automates the isolation of genomic DNA (gDNA) from various sample types using the ReliaPrep<sup>™</sup> Large Volume HT gDNA Isolation System chemistry. The automated protocol is pre-configured with the flexibility to meet the needs of high-throughput genomics workflows. The system processes any combination of sample volumes across the full input range of the chemistry, automatically metering reagents as appropriate for individual sample volumes. You need only specify the number of samples to process and the desired elution volume. Additional options allow you to tailor the DNA purification process to meet your needs.

## 2. Product Components and Storage Conditions

PRODUCT	CAT.#
Tecan Freedom EVO <sup>®</sup> -HSM Workstation (U.S. only*)	Contact Tecan
HSM Integration/Installation	XAT1005
ReliaPrep <sup>™</sup> Large Volume HT gDNA Isolation System	A2751

Cat.# A2751 contains sufficient reagents for 96 isolations from up to 10ml each. Includes:

- 23ml Proteinase K (PK) Solution
- 130ml Alkaline Protease (APA)
- 1,400ml Cell Lysis Buffer (CLD)
- 1,600ml Binding Buffer (BBA)
- 115ml ReliaPrep<sup>™</sup> Resin
- 3,500ml Prepared Wash Buffer (WBC)
- 4 × 150ml Nuclease-Free Water

**Storage Conditions:** Store the ReliaPrep<sup>™</sup> Large Volume HT gDNA Isolation System at room temperature (15–30°C). **Do not** refrigerate or freeze the reagents. Between uses, store on-deck reagents in tightly capped containers at room temperature.

\*Customers outside the United States, please contact your local Promega Branch Office or Distributor. Contact information available at: [www.promega.com](http://www.promega.com)

### Naming Conventions

Throughout this document, the solutions supplied with the ReliaPrep<sup>™</sup> Large Volume HT gDNA Isolation System are referred to as follows:

- Proteinase K (PK) Solution = Proteinase K Solution
- Alkaline Protease (APA) = Alkaline Protease
- Cell Lysis Buffer (CLD) = Cell Lysis Buffer
- Binding Buffer (BBA) = Binding Buffer
- Prepared Wash Buffer (WBC) = Prepared Wash Buffer

### 3. Before You Begin

#### 3.A. Compatible Sample Types

Detailed documentation for individual sample types is available at: [www.promega.com](http://www.promega.com). While all supported sample types may be processed on the same instrument, not all combinations of sample types are supported within a single run. Heavily clotted samples are not supported because they may block the vacuum aspiration tips. Samples should be able to pass through a standard 10ml serological pipet. Samples compromised by suboptimal storage may be processed; however, the resulting DNA yield and quality may suffer. Please contact Promega Technical Services ([techserv@promega.com](mailto:techserv@promega.com)) if you have questions about compatible sample types.

#### 3.B. System Configuration Options

Each Tecan Freedom EVO<sup>®</sup>-HSM Workstation may include one or more optional features that expand the capability of the system. Any of these components may be retrofitted onto existing workstations. Please contact your Promega representative to discuss upgrading.

- **Vacuum Sensor:** Detects the vacuum pressure in the vacuum waste bottle. The user is alerted if the system cannot maintain adequate vacuum.
- **2D Bar-Coded Rack Scanning:** This option replaces the 3-position plate carrier with a Ziath 2D/1D bar code scanner plus 2 standard plate positions. This option allows the use of 2D-bar-coded racks as sample and elution labware.
- **Pos-ID:** Supports automated scanning of 1D-bar-coded tubes in the included tube racks.
- **Lower Shelving:** Lifts liquid bottles and vacuum pump from the floor.
- **Dust Cover:** Encloses the top of the instrument worktable.

#### 3.C. Sample and Elution Labware

The Tecan Freedom EVO<sup>®</sup>-HSM system supports several sample input and elution output formats specific to each sample type. Racks are included for 10mm, 13mm and 16mm tubes. These racks fit the most common blood collection tubes and 2ml screw-cap tubes. Other standard Tecan 16-position tube racks are compatible with the system but are not included in the system. You also may use ANSI/SLAS-compliant plates or tube racks including 96- and 48-well configurations. Tube racks with 2D-bar-coded bottom labels may use the optional Ziath 2D/1D bar code scanner to assign sample and elution bar codes.

You should discuss your sample and elution labware requirements during the installation of your system. Not all sample input options will be available for all sample types. More information is available in the sample-specific technical literature available at: [www.promega.com](http://www.promega.com). All sample eluates are transferred to an intermediate deep 96-well plate prior to the final elution labware.



### 3.D. Low Volume Samples

The Low Volume Adapter for the HSM allows the Tecan Freedom EVO®-HSM system to process samples with low cell numbers while producing high-concentration DNA eluates. Detailed documentation for supported sample types is available at: [www.promega.com](http://www.promega.com). When processing these samples, 14ml round-bottom tubes (e.g., Becton Dickinson Falcon 352006) replace the 50ml conical tubes in the HSM. Sample elution volumes range from 100–500µl.

### 3.E. Elution Volume Ranges

DNA should be eluted using the sample-specific elution medium. For most sample types, the elution medium is Nuclease-Free Water. Other sample types require elution in 25mM Tris-HCl (pH 8.0). On-screen instructions will specify the correct elution medium. Users may select elution volumes from 500–1,500µl when processing samples in 50ml conical tubes. Eluting DNA in a smaller volume will increase the purified DNA concentration but will result in lower total yield. Final elution volumes of less than 1ml may result in poor resuspension of the ReliaPrep™ Resin, causing decreased performance and increased resin carryover into the eluates. Users have the option to scale elution volumes to the initial sample volume. This will maximize DNA concentration for low-volume samples and maximize yield for high-volume samples. The Low Volume Adapter allows users to select elution volumes from 100–500µl. If a user selects an elution volume that exceeds the capacity of the elution labware, the system will automatically override the selected elution volume and substitute the maximum labware elution volume.

### 3.F. DNA Quantitation and Evaluation

DNA quality and concentration can be determined by a variety of means including spectrophotometry, dye fluorescence, gel electrophoresis and quantitative PCR. Different DNA quantitation methods frequently return dissimilar absolute quantitation values. We recommend that you use a consistent method for DNA quality and quantity throughout your procedure (i.e., use the same method for quantifying purified DNA and for qualifying DNA for input into your downstream application).

## 4. Automated Processing

### 4.A. Processing Options

The Tecan Freedom EVO®-HSM workstation provides several options for processing samples. Users select processing options through the TouchTools™ interface. Not all processing options are available for all sample types. When running a protocol, only the options available for that sample type will be displayed. Default processing options may be defined for your system to best conform to a user's typical workflow (e.g., RNase addition). Each sample type will also use unique sample and elution labware that are configured to a user's needs. For example, 16mm Vacutainer® tubes typically contain whole blood and blood cell samples but not buffy coat samples. You should discuss customization of labware and processing defaults prior to installation of your workstation. If you need to change the customization options, please contact Promega Technical Services at: [techserv@promega.com](mailto:techserv@promega.com). The options described below may be selected on a per-run basis with no additional customization required.

**Sample Transfer:** Depending on the sample type, samples may be transferred from sample labware or manually transferred into the processing tubes. The system can transfer the entire contents from primary tubes or transfer up to a maximum specified volume. If a maximum specified volume is selected, the system will attempt to transfer the indicated volume. If a tube does not contain sufficient volume, the system will transfer the entire contents of the tube for processing. Starting with samples in 10ml blood collection tubes will increase the total processing time by up to 1 hour for thirty-two 10ml samples. The exact sample transfer time will vary depending on the number and volume of your samples.

**Sample Tracking:** Sample and reagent bar code tracking are standard features of the system. Bar code options are selected at run time as you select the sample and elution labware. You may choose to either enter bar codes using the included manual bar code scanner or have the system scan bar codes using one of the optional integrated bar code scanners described in Section 3.B. If you choose manual entry, the system will prompt you to scan the sample labware near the beginning of the method. You will scan the elution labware near the end of the run. The included manual bar code scanner supports all common 1D and 2D bar code formats.

**Elution:** You may select elution volumes from 500 to 1,500 $\mu$ l. If “Scale Elution Volume” is selected, the system will calculate the elution volumes from the initial sample volume. Samples at or below the lowest supported volumes will elute in 500 $\mu$ l. The elution volume for samples up to the maximum supported volume will scale linearly from 500 $\mu$ l to 1,500 $\mu$ l. The Low Volume Adapter allows you to select elution volumes from 100–500 $\mu$ l. Using the “Scale Elution Volume” option will produce eluates between 100–250 $\mu$ l. The system automatically compensates for the average evaporative losses during elution. The system can add concentrated Tris-EDTA (TE) or EDTA to the eluates resulting in a 1X TE solution. The system will compensate for the volume of TE or EDTA added to the samples to eliminate any sample dilution. Samples may be transferred to final elution labware, depending on the preferences selected at run time.

**Language Support:** The TouchTools™ user interface supports translation into a user’s local language. This allows users to interact with the workstation in their chosen language once launching the sample-specific scripts. This includes all sample and worktable information screens described in Section 4.D, system maintenance and common errors. In some cases, the system displays error messages directly from EVOware®. TouchTools™ will display these messages using the language selected during EVOware® installation, currently English, German or Chinese.

**Reagent Lot Information:** The system will log the reagent lots used in sample processing. You will be prompted to confirm or update the reagent bar code information during the worktable setup. The system automatically imports the reagent lot information from the previous processing run. To update the bar code for a reagent, touch the bar code field, and then scan the 2D bar code on the reagent bottle.

**Bar Code Validation:** The system employs optional bar code validation between sample and elution bar codes. Sample and elution bar codes should match exactly, or one bar code must wholly contain the other bar code (e.g., cdefgh is contained in abcdefghij). Bar code validation is inactive for 2D-bar-coded racks because these bar codes are randomly generated. The system will prompt users to resolve any bar code mismatches before proceeding with eluate transfer.



#### 4.B. Additional Materials

In addition to the Promega-supplied reagents, some additional supplies and reagents must be prepared and supplied by the user.

- **50% ethanol:** Combine equal volumes of 95–100% USP/ACS- or molecular-biology-grade ethanol with molecular-biology-grade water. Mix. **Note:** Using denatured ethanol that contains methanol or isopropanol may cause a decrease in DNA yield and purity.
- **100mM sodium hydroxide:** Prepare at least 300ml of 100mM sodium hydroxide in deionized water for each run. This solution also may be purchased (e.g., Fisher Cat.# ss276-4). Use 100mM sodium hydroxide to clean the system.
- **RNase A (optional):** Prepare an RNase A stock at 4mg/ml. RNase A prepared at this concentration is available from Promega (Cat.# A7974).
- **Concentrated Tris-EDTA (TE; optional):** Promega offers a 20X concentrated TE Buffer solution (Cat.# A2651). Alternatively, prepare a concentrated stock of TE according to your lab preferences. The stock should be concentrated between 10- and 20-fold higher than your desired final concentration. Be sure to select a concentration factor during the initial installation of your instrument to ensure that the correct dilution scheme is applied during processing.
- **Concentrated EDTA (Optional):** Promega offers a Concentrated EDTA stock solution (Cat.# V4231). Alternatively, prepare a concentrated stock of EDTA according to your lab preferences.

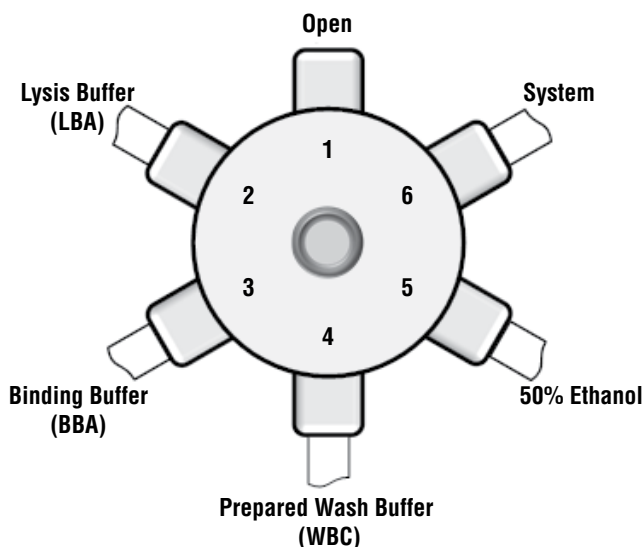
The following **Tecan consumables** are required for a 32-sample extraction. We recommend using only filtered disposable tips to minimize cross-contamination risk.

Part Description	Quantity	Tecan Catalog Number
LiHa Disposable Tips, 1000µl, Filtered	184 tips	10 612 513
Disposable Trough for Reagents, Grey	6	10 613 049
25ml Disposable Trough	3	30 055 743

#### 4.C. Bulk Reagents

Bulk reagents are supplied to the processing tubes through the fixed LiHa tips via the six-way valve located on the back of the instrument. It is important that the correct reagents be connected to the appropriate position on the 6-way valve because there is no automatic verification of reagent identity (Figure 1). The four bulk reagents are stored in the supplied bottles on the shelf to the left of the instrument. During the script launch, the deck setup screen will prompt you with the minimum recommended volume for each reagent.

Not all sample types require all of the bulk reagents. However, it is not necessary to change the bulk reagents when switching between sample types. The location and identity of the bulk reagents remains constant across all ReliaPrep™ methods.



111831B

**Figure 1. Connection layout for the 6-way valve as viewed from the rear of the instrument.**



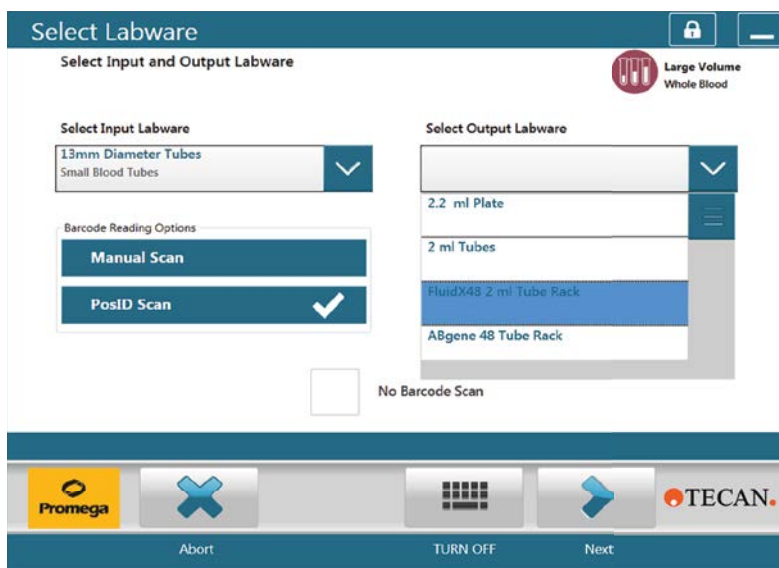
#### 4.D. DNA Purification Procedure

The primary interface for the DNA purification method is Tecan TouchTools™ software. Using the interactive screens, select all of the user-configurable options for your run. After logging into the software, select “**Application Starter**” from the **Available Operating Modes** screen. Select the appropriate sample script from the available choices.

The series of screens that follow allow you to select all the processing options available on your system for your sample type. You also may select bar code tracking options. The examples below are taken from a whole blood genomic DNA purification script. **Note: Not all processing options may be available for every sample type.** You may navigate forward and backward within the processing options screens and within the worktable setup screens. However, you may not navigate backward to edit your processing options once you have selected them. If you have selected a method that requires the Low Volume Adapter, the system will prompt you to use the adapter. The interactive screens will also be adapted to your low-volume application.

#### Sample and Elution Labware Screen

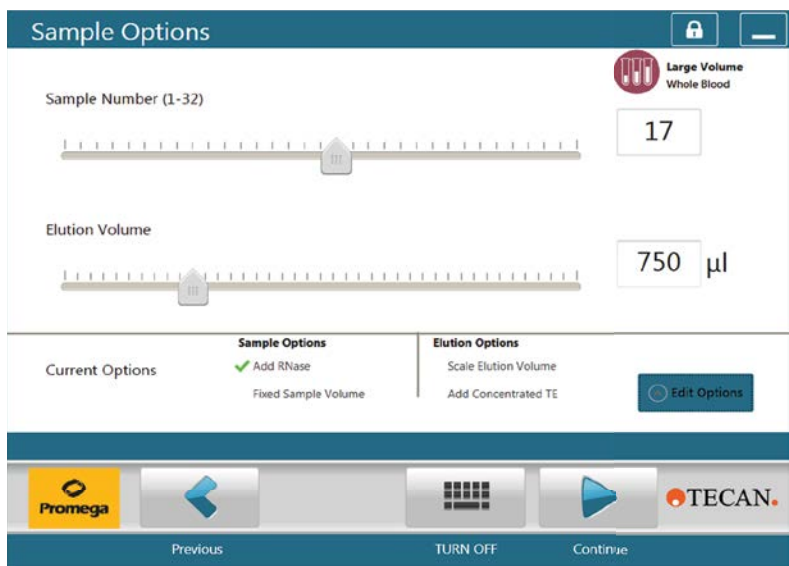
At the **Select Labware** screen (Figure 2) you will select your sample and elution labware from the two drop-down menus. Samples can begin processing in defined labware or in 50ml conical tubes preloaded onto the HSM. The system will transfer samples to 50ml tubes in the HSM before processing. The list of labware options will be specific to the sample type chosen. After selecting each labware, the available bar code options specific to that labware will appear on the screen. The bar code entry options displayed will depend on the labware selected and the installed bar code entry hardware. Select a bar code entry option, or select “**No Barcode Scan**”.



**Figure 2. Select Labware screen.** Choose the sample and elution labware from the choices listed in the on-screen menus. For each labware, select the desired bar code entry option or check “No Barcode Scan”. The bar code options displayed depend on the labware selected and the system configuration.

## Sample Processing Options Screen

At the **Sample Options** screen (Figure 3) you will select how your samples will be processed. To adjust the sample number, move the slider until the correct number of samples is indicated. The lower slider adjusts the elution volume. The bottom section of this screen summarizes the currently selected processing options such as RNase addition. Initially, the processing options defined during installation as default selections will be checked. To modify these selections, touch the “**Edit Options**” button on the lower-right corner of the screen.



**Figure 3. Sample Options screen.** Select the processing options for your samples. In this example, the system will process 17 samples eluting in 750µl with RNase addition. Not all sample options are available for all sample types.

The expanded processing options menu allows you to modify the selected processing options.

- RNase A addition is an optional processing step. If you wish to have the system add RNase A, select the checkbox for **Add RNase**.
- You can choose to process a fixed maximum volume when you are transferring samples from primary tubes. To do this, select the **Fixed Sample Volume** checkbox, and enter the maximum volume to transfer and process. For samples containing less than the specified volume, all of the available sample will be transferred.
- You can scale the elution volume based on the initial sample input volume by selecting the **Scale Elution Volume** checkbox. When this option is selected, the system will scale elution volume from 500 to 1,500µl from the lowest to the highest supported sample volumes. For example, if you have 3ml, 5ml and 10ml whole blood samples, the elution volumes would be 500µl, 785µl and 1,500µl, respectively. If you choose to scale the elution volume, the system will disregard the selected elution volume. The Low Volume Adapter allows users to select elution volumes from 100–500µl. Using the **Scale Elution Volume** option will produce eluates between 100–250µl.

#### 4.D. DNA Purification Procedure (continued)

##### Sample Processing Options Screen (continued)

- The system can add concentrated Tris-EDTA (TE) or EDTA to the eluates, resulting in a 1X TE solution. The system will compensate for the volume of TE or EDTA added to the samples to eliminate any sample dilution.


##### Instrument Setup Screens

After entering your sample processing information, the next series of screens (Figure 4) will guide you through the instrument setup for your run. The information describes the setup from the left to right sides of the system. For each position, the system will prompt you to load the appropriate reagent, labware or sample. You will enter bar code tracking information for items as the system prompts you to load them. Reagent preparation screens display the recommended volume of reagents based on the sample number previously entered. The recommended volumes assume that all samples are the maximum supported volume and include any overfill. You must acknowledge each step using the checkboxes before the system will permit you to proceed.



Site	Labware	Reagent	Volume	Barcode
Site 1	100 ml Trough	Nuclease Free Water	8ml	NFW2222
Site 2	100 ml Trough	ReliaPrep Resin	15ml	resin2222
Site 3	100 ml Trough	Alkaline Protease	17ml	AP2222

**Figure 4. Example Instrument Setup screen.** This setup screen provides instructions for loading three on-deck reagents. The reagent names, labware and volumes are all displayed. Update or enter the reagent bar codes using the fields to the right of each reagent.

 To ensure thorough resuspension, do not add more than 35ml of ReliaPrep™ Resin to the reagent trough. Shake the ReliaPrep™ Resin bottle for at least 30 seconds prior to filling the reagent trough to ensure that the resin is homogeneously resuspended.

Additional setup screens will prompt users to load samples in the previously selected sample labware. If the user has elected to scan sample bar codes using the manual scanner, the system will prompt for manual bar code scanning during sample loading. Otherwise, the system will indicate where to load samples for automated scanning. Samples should always be loaded from the rear of the instrument forward, then left to right. The on-screen instructions will indicate what positions to use for samples.

The system will begin processing samples after the instrument setup screens are completed. No further intervention is required until the DNA is eluted unless there are problems during sample transfer/detection or vacuum removal (see Section 4.F). If the user has elected to leave the DNA in the intermediate plate, no further action is required. If the user has elected to have the DNA eluates transferred to a final plate or tubes, the user will be prompted to centrifuge the intermediate plate and return it to the robot. When eluting to tubes, the user will be prompted to load elution labware during the centrifugation.

#### **4.E. Maintenance Scripts**

Preloaded scripts allow the user to perform certain basic system tasks. These methods are accessible from the TouchTools™ main menu.

- **Daily\_Maintenance:** The maintenance tasks for the system should require no more than 10 minutes of time each day. This method will guide the user through the recommended daily tasks. The system will prompt the user to clean and inspect the liquid handling tips and empty the vacuum waste.
- **Weekly\_Maintenance:** All daily maintenance tasks are included in the weekly maintenance. In addition, the system will guide the user through cleaning of the vacuum system.
- **System\_Reset:** In cases where a run terminated prematurely, the system state may not allow the user to start a new run. This script will stop the HSM shaking, deactivate the magnets, drop the disposable tips and clear any intermediate files.



#### 4.F. Error Handling

There are checks in the method designed to protect the equipment and sample integrity. If no sample is detected in the processing tubes, the user will be prompted to check the tube and transfer the sample manually, if necessary, then enter the approximate sample volume at the prompt. A similar message appears if the system detects more than the supported volume in a tube. Check the sample level, and enter the actual volume.

Following lysate removal, the system verifies that the vacuum system completely evacuated the processing tubes. In the case of heavily clotted blood, a vacuum tip may become clogged. If there is evidence of poor evacuation the user will be directed how to clean the vacuum system and resume sample processing. A 22g (0.70mm OD) needle is required to clear the vacuum tips. The user also will be required to manually evacuate the processing tubes to eliminate any chance of re-clogging the system. Following system cleaning, refresh the reservoir of 100mM sodium hydroxide.

If the system crashes due to an event such as power failure, the system will not be able to resume automated processing. If this happens, samples can be processed using the HSM in standalone mode. Instructions on operating the HSM are available in the *HSM 2.0 Instrument Technical Manual #TM389*, available online at: [www.promega.com/protocols/](http://www.promega.com/protocols/). The HSM 2.0 software is preloaded on the system. The user can advance processing to the last known step of the method and should process all of the samples using the reagent volumes for the largest sample in the sample set. Please contact Promega Technical Services for questions about rescuing a purification run.

#### 4.G. Sample Reporting

The system employs a flexible reporting system allowing customized data reporting. During the run, sample and run data are stored in an xml-formatted file, Run\_data.xml. At the end of the run, user-produced report templates define the text-based reports generated by the system. The system automatically archives the master data file to **C:\Program Data\Tecan\Evoware\database\Promega Logs**. Each output filename is appended with a unique timestamp (“\_yyyymmddhhmmss”, e.g., Run\_Data\_20150903135812.xml) to prevent any accidental file deletion or overwrite. The system has the capability to produce an unlimited number of individual text reports for each run.

The file **C:\Program Data\Tecan\Evoware\database\Tools\Reports.xml** contains the report templates for all of the reports. Each template defines the filename, extension and file path for each report. Any ASCII character can serve as the delimiter for the report data. Each report contains a header table of run information followed by a table of sample information. Any or all of the data contained in the Run\_Data.xml file can be included in each report that the system produces. Discuss system reporting needs during initial system installation. For assistance with modifying report templates, please contact Promega Technical Services ([techserv@promega.com](mailto:techserv@promega.com)). It will be necessary to provide the Reports.xml file from the system and a list of requested reporting changes.

## 5. Troubleshooting

For questions not addressed here, please contact your local Promega Branch Office or Distributor. Contact information available at: [www.promega.com](http://www.promega.com). E-mail: [techserv@promega.com](mailto:techserv@promega.com)

### Symptoms

### Causes and Comments

Low DNA yield

Failure to resuspend the ReliaPrep™ Resin adequately before use. Thoroughly resuspend ReliaPrep™ Resin in the reagent bottle before dispensing for sample purification.

Sample contained too few white blood cells per milliliter of blood. DNA yield depends on the amount of starting material. Blood samples with low white cell counts will have reduced yields because of the low sample input. For blood samples with low white blood cell counts, we recommend collecting the buffy coat and processing the sample using the Low Volume Adapter. The adapter is well suited to buffy coat samples with fewer than  $2.5 \times 10^7$  white blood cells.

Sample size exceeded the processing capacity of the system. The ReliaPrep™ Large Volume HT gDNA Isolation System is optimized for a specific volume for each sample type. Processing samples that are outside of this volume range may result in reduced DNA yield and concentration. Exceeding the upper limit may cause the required processing volumes to exceed the maximum working volume of a 50ml tube. The ReliaPrep™ Large Volume HT gDNA Isolation System is optimized for normal, healthy adult samples.

Successful use of the ReliaPrep™ Large Volume HT gDNA Isolation System depends on use of the correct reagents in the correct order. Check to ensure that all reagents were placed in correct positions on the instrument and that reagents were diluted correctly prior to use.

Carefully inspect the bulk reagent bottles. Make sure there is adequate reagent present in the bottles, the reagent tubing reaches the bottom of the bottles and the bottle caps are loosely attached or vented to allow air to freely enter the bottles.

Dripping from disposable tips

Verify that the system liquid bottle is full and the system liquid waste bottle is empty. Both bottles should be properly connected.



## 5. Troubleshooting (continued)

### Symptoms

Degraded DNA

### Causes and Comments

Nucleases were introduced during purification and by handling. Use nuclease-free plasticware or glassware. Use filter tips during all pipetting steps. Wear gloves at all times. Nucleases introduced after elution will degrade DNA. Use optional addition of concentrated TE Buffer to a final concentration of 1X in the final eluate to protect eluted DNA from nucleases.

DNA was degraded before the purification process. If sample DNA was degraded before purification, the resulting purified DNA will also be degraded.

ReliaPrep™ Resin in final eluate

Concentrated DNA solutions can be viscous. Additional time may be required to capture the ReliaPrep™ Resin from such viscous solutions. Remove residual resin from the eluted DNA by performing the indicated centrifugation.

Reduced DNA purity

A reduction in DNA purity as measured by spectroscopic ratios or downstream assay results is often the result of incomplete lysate removal. Any physical adjustments of the robotic system can influence the efficiency of lysate removal.

Contact **techserv@promega.com** before attempting any adjustments to the robotic system.

Instrument error messages

If the system reports insufficient volume in a reagent trough, verify that the correct trough type is used for the reagent and add additional reagent to the trough.

For all other errors contact Promega Technical Services (**techserv@promega.com**). Make a note of the specific error message and time. You will need the detailed EVOware® logs found at: **C:\ProgramData\Tecan\EVOware\AuditTrail\log**. The log files use the naming convention **EVO\_yyyy-mmdd\_hhmmss.log**, where the timestamp represents the date of file creation.

## 6. Related Products

<b>Product</b>	<b>Size</b>	<b>Cat.#</b>
HSM 2.0 Instrument	1 each	A2715
RNase A Solution	5ml	A7974
20X TE Buffer (pH 7.5)	25ml	A2651
EDTA, 0.5M (pH 8.0), Molecular Biology Grade	100ml	V4231
25mM Tris-HCl (pH 8.0)	60ml	A2641
Alkaline Protease (APA)	130ml	A1721
Cell Lysis Buffer (CLD)	1,400ml	A1731
Binding Buffer (BBA)	1,600ml	A1741
ReliaPrep™ Resin	115ml	A1752
Prepared Wash Buffer (WBC)	3,500ml	A2681
Proteinase K (PK) Solution	23ml	A5051
Nuclease-Free Water	500ml	P1197
	1,000ml	P1199
Tissue Lysis Buffer (TLA)	500ml	A5091
Bottle for 50% Ethanol	1 each	A2691
Integrated Reagent Caps	4/pk	A2701

## 7. Summary of Changes

The following changes were made to the 12/16 revision of this document:

1. The Tecan Freedom EVO®-HSM Workstation must now be ordered by contacting Tecan Corporation.

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ReliaPrep is a trademark of Promega Corporation.

EVOware and Freedom EVO are registered trademarks of Tecan Corporation. TouchTools is a trademark of Tecan Corporation. Vacutainer is a registered trademark of Becton, Dickinson and Company.

All prices and specifications are subject to change without prior notice.

Product claims are subject to change. Please contact Promega Technical Services or access the Promega online catalog for the most up-to-date information on Promega products.