DTPM®

MagNA-Gene DNA/RNA Purification Kit

— User Guide —

REF EXT38420 Version 1.0

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For Research Use Only
Not For Use In Diagnostic Procedures

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PRODUCT DESCRIPTION

Kit Description

The DTPM MagNA-Gene DNA/RNA Purification Kit is designed as a fast, efficient, and cost-effective solution for users who require high-quality, high-yield nucleic acid purification.

Each kit contains nucleic acid binding beads, binding solution, proteinase K, wash buffer, and high-purity elution solution yielding isolated DNA/RNA suitable for PCR, qPCR, and most NAAT applications.

The procedure for automated extraction of 200 µL sample input, performed on the KingFisher™ Flex Purification System, is described on page 6: Purification of Nucleic Acids Protocol.

Contents and Storage

Store each kit component according to the storage recommendations in the table below.

Material Name	Volume	Recommended Storage Condition
MagNA-Gene Binding Solution (EXT38402)	110 mL	15 – 25° C
MagNA-Gene Wash Buffer (EXT38404)	200 mL	
MagNA-Gene Proteinase K (EXT38403)	4 mL	
MagNA-Gene Elution Solution (EXT38401)	60 mL	
MagNA-Gene Binding Beads (EXT38405)	4 mL	

METHODS

Important Guidelines

Inspect the content of the kit to ensure the integrity of included components upon receipt. Do not use damaged products.

Refer to Safety Data Sheets (SDS) for precautions related to material handling. Always wear personal protective equipment (PPE) when handling reagents. The included Binding Solution and Wash Buffer contain potential irritants and must be handled with appropriate precautions.

Treat all samples and waste as potentially infectious. Avoid contact with skin and eyes when handling sample materials and reagents.

Always follow appropriate waste handling and disposal guidelines as designated by local authorities. Disinfect work areas which may be exposed to sample materials and/or reagents.

Always use RNase-free equipment and reagents.

Refer to your laboratory safety guidelines for additional information or restrictions related to use of these materials.

Sample Handling

- Store samples according to established guidelines for each collection device and sample type.
- Avoid multiple freeze/thaw cycles to ensure nucleic acid integrity.
- Equilibrate samples to room temperature (15º C – 25º C) before use.
- If the volume of the sample is less than 200 µL, add PBS or 0.9% NaCl to a final volume of 200 µL.
- Treat all samples as potentially infectious materials.
- Whenever possible, use fresh sample material.

Required Materials Not Provided

Unless otherwise indicated, all materials are available through DTPM. Please visit **store.DTPM.com** or contact your **customer representative** for further information.

Material Name	Product Number
KingFisher™ Flex 96-Deep Well	KF-FLEX96DEEP
Molecular Grade Ethanol 200 proof (100%)	04-355-450
Phosphate Buffered Saline (PBS)	70-011-044 FH
E1-ClipTip™ Bluetooth™, Yellow, 2-125 µL, Multichannel Equalizer Pipette	14-3879-74BT FH
Research® plus Adjustable Volume Pipettes 0.5 – 10 µL, 10 – 100 µL, 100 – 1000 µL	14-285-904 FH
Pipette tips, sterile, filtered, 10 µL	10uL-XL-SFR
Pipette tips, sterile, filtered, 20 µL	DTPM-20uL 01
Pipette tips, sterile, filtered, 100 µL	100uL-SFR
Pipette tips, sterile, filtered, 200 µL	200uL-SFR
1000-1250 µL Pipette Tips, Racked with Filter, PP, DNase and RNase-Fre, Sterile, 96 Tips/Rack - 50 Racks	1250uL-SFR
96-well, 0.5 mL, square top, V-bottom, sterile	DTPM-.5 Elution Plate
96-well, 2.2 mL, square top, v-bottom, sterile	DTPM-2.2 Sblock
96-well, tip comb, sterile	DTPM-Tip Comb
384-well, 40 µL, full skirt, clear, sterile	384-40-FSC
Optical Adhesive PCR Film	PA990001
Vortex-Genie® 2, 120V	50-728-002 FH
Nitrile Gloves	PRO100113-S, PRO100113-M, PRO100113-L, PRO100113-XL

Optional Materials Not Provided

Material Name	Product Number
DTPM – MTM (Molecular Transport Medium)	PV990001
RNAse Away	21-402-178
2.0 mL Screw Cap Microcentrifuge Tube	MICTUBE-2 SM
FreeWipes™ Lint Free Wipes	YA990011

Before Use of the MagNA-Gene Kit

General Guidelines

- Read all instructions prior to use.
- Inspect the kit and all material packaging to ensure the contents are present and in good condition.
- Be sure to review all required equipment and any additional materials before using the MagNA-Gene kit.
- Organize all required components before starting any procedure.
- Follow all required safety instructions for safe handling of samples and reagents.

Preparation of Reagents and Buffers

- Ensure all working solutions are prepared according to the recommendations included in the protocol.
- All working solutions should be marked with the date of preparation to ensure those reagents are properly maintained.
- Evaluate each of the working solutions prior to each use to ensure there are no precipitates present. If salts or precipitates formed, they must be re-dissolved before use by warming the solution to 37ºC followed by equilibrating to room temperature. Gently invert to mix.
- ALWAYS use appropriate controls when performing any procedure.

Purification of Nucleic Acids Protocol

Reagent Preparation for Extraction

1. Determine the number of reactions required to perform testing.
   a. Ensure to include preparations for positive and negative controls.
2. Prepare fresh solution of:
   a. 80% Ethanol, molecular grade; 20% Nuclease-free water, molecular grade
3. Before use of Binding Beads, ensure that it is fully resuspended. Vortex for ~ 3 minutes before using for the first time or ~ 1 minute before subsequent uses.
4. Prepare the Binding Bead Mixture according to Table 1. Find the total prepared binding bead mixture volume by multiplying the volumes per reaction components by n+2 (“n” being the number of total samples including controls).

For example, for 6 samples, + 1 positive control, + 1 negative control, the volumes of assay components should be multiplied by 10 (8 samples & controls, +2 additional).

   a. n = 8 samples/controls + 2 = 10 reactions [10 x 215 µL Binding Buffer + 10 x 10 µL Binding beads = 2,250 µL Binding bead mixture]

IMPORTANT! Do not add Proteinase K directly to the Binding Bead Mixture! This can cause clogs or precipitates.

Table 1. Binding Bead Mixture Preparation

Reagent	Volume per well*
Binding Solution (PN EXT38402)	215 µL
Binding Beads (PN EXT38405)	10 µL
Total Volume per well	225 µL

Automated Extraction Plate Setup

1. Label and prepare 5 x 96-well, 2.2 mL well plates (PN # DTPM-2.2 Sblock) and 1 x 96-well, 0.5 mL plate (PN #.5 Elution Plate) according to Table 2.

Table 2. Instrument Setup and Reagent Volumes

Plate ID	Plate Type	Plate Position	Content	Volume (µL)
Sample Plate	96-well, 2.2 mL	1	Sample Lysis Plate	435
Wash 1	96-well, 2.2 mL	2	Wash Buffer	500
Wash 2	96-well, 2.2 mL	3	80% Ethanol	500
Wash 3	96-well, 2.2 mL	4	80% Ethanol	500
Elution Plate	96-well, 0.5 mL	5	Elution Solution	150
Tip Comb Plate	96-well, 2.2 mL	6	Tip Comb	N/A

2. Add 10 µL Proteinase K to each well required in the sample lysis plate.
3. Add 200 µL sample to each required well in the sample lysis plate.
4. Pipette 225 µL Binding Bead mixture into the bottom of each required well in the sample lysis plate.

*NOTE: Remix Binding Bead Mix by inversion frequently during pipetting to ensure even distribution of beads to all samples or wells. Binding Bead Mix is viscous, so pipette slowly to ensure that the correct amount is added. DO NOT reuse pipette tips to add Binding Bead Mix to the samples, as the high viscosity will cause variations in the volumes added.

Automated Extraction Plate Instrument Operation

1. Turn KingFisher™ Flex instrument power on, if not already performed.
2. If using an interfaced computer, open BindIt Software and select the protocol **MVP_Flex_200ul** or select **MVP_Flex_200ul** protocol directly from the integrated KingFisher™ Flex control panel.
3. Start the protocol **MVP_Flex_200ul**.
4. Immediately load each of the prepared plates onto the KingFisher™ Flex following the instrument prompts for each plate location.
5. Upon completion of the protocol, follow the instrument prompts to remove the 96-well, 0.5 mL plate containing the purified nucleic acids.
   a. This plate contains the sample used for analysis.
   b. Samples may be pipetted directly from the plate or individually transferred into capped vials for further use and/or storage.
   c. Seal elution plate containing purified nucleic acids if not used within 5 minutes.
6. Remove remaining deep-well plates, following the instrument prompts.

Optional Pre-treatment Steps for Purification of Nucleic Acids

Nucleic Acid Purification from Buccal Swabs

1. Collect buccal swab sample according to the approved procedure.
2. Place buccal swab into 200 µL of 1x PBS and swirl to integrate.
3. Proceed to **Purification of Nucleic Acids Protocol**

Nucleic Acid Purification from Complex Urine Samples

1. Add 0.5 mL of 0.5 M EDTA to 4.5 mL of urine. Gently invert to mix.
2. Centrifuge 10 minutes at 3,500 rpm.
3. Discard the supernatant.
4. Resuspend the pellet in 200 µL of 1x PBS.
5. Proceed to **Purification of Nucleic Acids Protocol**

Nucleic Acid Purification from Saliva Samples

1. Centrifuge saliva sample for 5 minutes at 3,500 rpm.
2. Resuspend cells in 200 µL of 1x PBS.
3. Proceed to **Purification of Nucleic Acids Protocol**

Safety Precautions

General Safety Considerations

Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and refers to their standard operating procedures.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDS) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDS, request them from DTPM at Help@DTPM.com or call (256) 845-1261 or (888) 317-1478.

Chemical Safety Handling

To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with sufficient ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of 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.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if needed) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

Biological Hazard Safety

Depending on the samples used on this instrument, the surface may be considered a biohazard. Use appropriate decontamination methods when working with biohazards.

Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases.

Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, Biosafety in Microbiological and Biomedical Laboratories (BMBL), 5th Edition, HHS Publication No. (CDC) 21-1112, Revised December 2009; found at: **https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009- P.pdf**
- World Health Organization, Laboratory Biosafety Manual, 3rd Edition, WHO/CDS/CSR/LYO/2004.11; found at: **www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf**

Technical Support

Contact DTPM Technical Support for any questions regarding use or for assistance with troubleshooting.

You may reach Technical Support using the following contacts:

Email: **HELP@DTPM.com**
Phone: (256) 845-1261