MagMAX™ FFPE DNA/RNA Ultra Kit

Automated on the Microlab™ NIMBUS™ Liquid Handler integrated with the KingFisher™ Presto Purification System

Catalog Number A31881

Pub. No. MAN0030192 Rev. A.0

WARNING! Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from **thermofisher.com/support**.

Product description

The Applied Biosystems™ MagMAX™ FFPE DNA/RNA Ultra Kit is designed to isolate both DNA and RNA from the same section of formaldehyde- or paraformaldehyde-fixed, paraffin-embedded (FFPE) tissues. The kit also allows for flexibility to isolate DNA only, RNA only or total nucleic acid (TNA). The kit uses MagMAX™ magnetic-bead technology, ensuring reproducible recovery of high-quality nucleic acid through manual or automated processing. The isolated nucleic acid is appropriate for use with a broad range of downstream assays, such as quantitative real-time RT-PCR and next-generation sequencing.

In addition to the use of traditional solvents, the kit is compatible with Autolys M tubes that enable a faster and more convenient means of deparaffinizing FFPE samples by eliminating the need for organic solvents such as xylene or CitriSolv and ethanol. Samples are put into the tubes for protease digestion, tubes are lifted with the Auto-pliers or Auto-Lifter and then samples are spun down. The wax and debris are contained in the upper chamber while the lysate is passed through. Afterwards, the clarified lysate can be directly purified with the MagMAX™ FFPE DNA/RNA Ultra Kit.

This guide describes isolation of DNA and RNA from FFPE tissue blocks using automated Microlab™ NIMBUS™ Liquid Handler with integrated KingFisher™ Presto instrument. The automation method includes liquid handling steps and KingFisher™ Presto script for extraction of nucleic acids. **The method was qualified for Sequential isolation of DNA and RNA utilizing AutoLys M tube and FFPE curls up to 40 µm. Remaining options in the method are available and have been tested using water as sample input.**

Contents and storage

Reagents provided in the kit are sufficient for 48 DNA and RNA isolations from sections up to 40 µm. Components from multiple kits are needed for sample size greater than 48.

Table 1 MagMAX™ FFPE DNA/RNA Ultra Kit (Cat. No. A31881)

Contents	Amount	Storage
Protease	385 µL	–5°C to –30°C
Protease Digestion Buffer[1]	10 mL	15°C to 30°C
Binding Solution[1]	38.5 mL	
Nucleic Acid Binding Beads[2]	1.95 mL	2°C to 8°C
DNA Wash Buffer	38.5 mL	15°C to 30°C
Wash Solution 2 Concentrate	210 mL[3]	
Elution Solution	5 mL	
RNA Wash Buffer Concentrate	115 mL[3]	
DNase	1.92 mL	–5°C to –30°C
DNase buffer	960 µL	

[1] Additional reagents are available separately; Protease Digestion Buffer, Binding Solution, and DNA Wash Buffer are also available as Cat. No. A32796.
[2] Shipped at room temperature.
[3] Final volume

Required materials not supplied

Unless otherwise indicated, all materials are available through **thermofisher.com**. "MLS" indicates that the material is available from **fisherscientific.com** or another major laboratory supplier.

Table 2 Materials required for nucleic acid isolation

Item	Source
Equipment	
Incubators or ovens at 60°C and 90°C	MLS
Centrifuge with plate adaptors	MLS
Adjustable micropipettors	MLS
Multi-channel micropipettors	MLS
Laboratory mixer (Vortex mixer or equivalent)	MLS
Locking lid for Autolys M Tubes	A37954
AutoLys M TubeLifter	A37956
AutoLys M Tube Pliers	A38261
AutoLys M Tube Rack	A37955
Tubes, plates, and other consumables	
AutoLys M Tubes and Caps	A38738
Nonstick, RNase-free Microfuge Tubes (1.5 mL)	AM12450
Nonstick, RNase-free Microfuge Tubes (2 mL)	AM12475
Aerosol-resistant pipette tips	MLS
Reagent reservoirs	MLS
Reagents	
Ethanol, 200 proof (absolute)	MLS
Isopropanol, 100%	MLS
Nuclease-Free Water	AM9938
CitriSolv™ Clearing Agent (or equivalent such as Xylene or other solvent)	22-143-975

Table 3 Additional materials required for manual isolation

Item	Source
Equipment	
Fisher Scientific™ Analog Vortex Mixer	02-215-365
Vortex Adapter-60	AM10014

Table 4 Additional materials required for automated isolation

Item	Source
Magnetic particle processor	
KingFisher™ Presto Purification System	5400830
Plates and combs	
96-well standard plates:	
96 Standard-Well Plates for KingFisher™ Flex Magnetic Particle Processor	97002540
Tip comb, compatible with the magnetic particle processor used:	
KingFisher™ 96 Tip Comb for DW Magnets	97002534
Consumables	
MicroAmp™ Clear Adhesive Film	4306311

Table 5 Required materials for automation while using Microlab™ NIMBUS™ Liquid Handler integrated with the KingFisher™ Presto Purification System.

Item	Source
2 mL tubes	MLS
5 mL tubes	MLS
60 mL reagent reservoirs	hamiltoncompany.com
200 mL reagent reservoirs	hamiltoncompany.com
300 µL conductive filter tips	hamiltoncompany.com
1000 µL conductive filter tips	hamiltoncompany.com

Download the KingFisher™ Presto program

The programs required for this protocol are not pre-installed on the KingFisher™ Presto Purification System.

1. On the MagMAX™ FFPE DNA/RNA Ultra Kit product web page, scroll down to the **Product Literature** section.
2. Right-click on the appropriate program file(s) for your sample size to download the program to your computer.
3. Select **Save as Target** to download to your computer.
4. Refer to the manufacturer's documentation for instructions for installing the program on the instrument.

Procedural guidelines

- Perform all steps at room temperature (20–25°C) unless otherwise noted.
- When mixing samples by pipetting up and down, avoid creating bubbles.
- When working with RNA:
  - Wear clean gloves and a clean lab coat.
  - Change gloves whenever you suspect that they are contaminated.
  - Open and close all sample tubes carefully. Avoid splashing or spraying samples.
  - Use a positive-displacement pipettor and RNase-free pipette tips.
  - Clean lab benches and equipment periodically with an RNase decontamination solution, such as RNase*Zap*™ Solution (Cat. No. AM9780).
- Incubation at 60°C can be extended overnight to increase DNA yields, followed by incubation at 90°C for 1 hour.

Before you begin

Before first use of the kit

- Prepare the Wash Solutions from the concentrates:
  - Add 46 mL of isopropanol to RNA Wash Buffer Concentrate, mix, and store at room temperature.
  - Add 168 mL of ethanol to Wash Solution 2 Concentrate, mix, and store at room temperature.

Before each use of the kit

- Equilibrate the Nucleic Acid Binding Beads to room temperature.
- Pre-heat the incubators or ovens to 60°C and 90°C.

Prepare reagents

To prepare the Protease Solution, RNA Binding Buffer, DNase Solution, and RNA Re-Binding Buffer, follow the instructions given in the appropriate user guide.

User guide	Publication number
User guides without using AutoLys M tubes	
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (sequential DNA/RNA isolation)	MAN0015877
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (DNA isolation only)	MAN0015905
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (RNA isolation only)	MAN0015906
User guides using AutoLys M tubes	
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (sequential DNA/RNA isolation)	MAN0017541
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (DNA isolation only)	MAN0017539
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (RNA isolation only)	MAN0017540
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (TNA isolation only)	MAN0017538

IMPORTANT! Do not pre-mix Magnetic beads and DNA Binding buffers, these reagents will be loaded individually. During automation, the reagents will be distributed by the Microlab™ NIMBUS™ Liquid Handler.

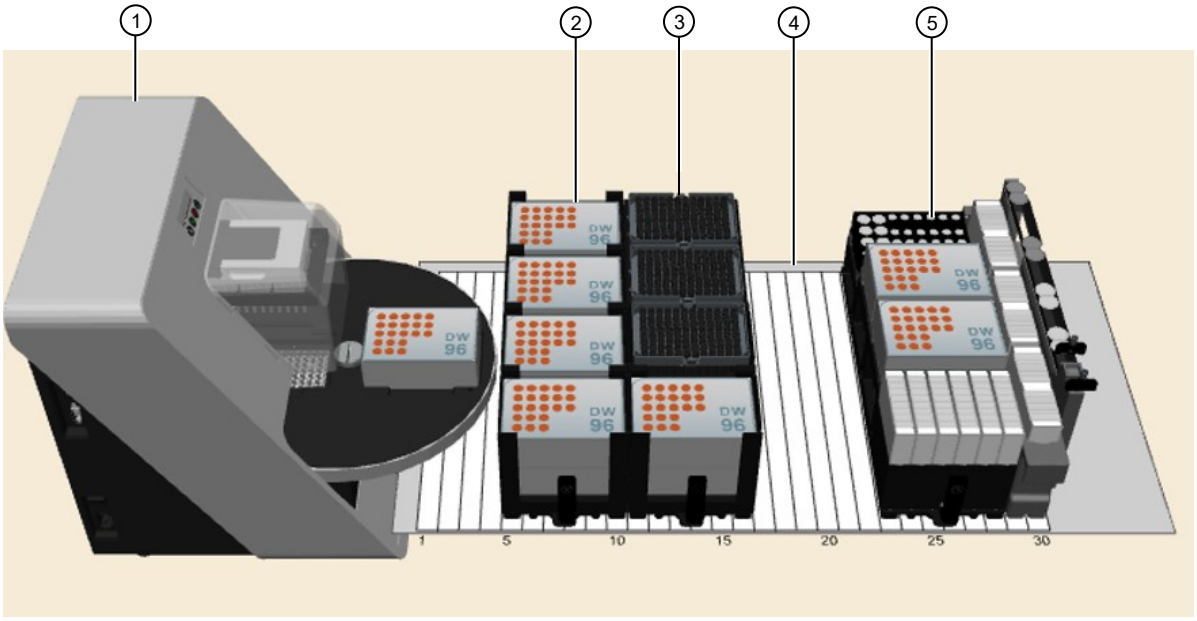
IMPORTANT! Pre-made reagents will be loaded into the Microlab™ NIMBUS™ Liquid Handler during the “Consumables loading” step.

Prepare FFPE samples

Follow appropriate protocols to prepare FFPE samples.

User guide	Publication number
User guides without using AutoLys M tubes	
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (sequential DNA/RNA isolation)	MAN0015877
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (DNA isolation only)	MAN0015905
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (RNA isolation only)	MAN0015906
User guides using AutoLys M tubes	
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (sequential DNA/RNA isolation)	MAN0017541
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (DNA isolation only)	MAN0017539
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (RNA isolation only)	MAN0017540
MagMAX™ FFPE DNA/RNA Ultra Kit User Guide (TNA isolation only)	MAN0017538

Automation configuration



1. KingFisher Presto instrument.
2. Empty DW Plates.
3. Tips and DW Plates.
4. Space for 1.5 flip cap tube runers for AutoLys tube racks. Input tube type based on user selection.
5. Small reagent tubes, DW plates, small reagent troughs, and large reagent troughs.

Automate liquid handling

For more automation information and NIMBUS™ script availability, please visit the Hamilton company website and/or contact Hamilton customer service.

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.

Life Technologies Corporation | 2130 Woodward Street | Austin, Texas 78744 USA

For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

Revision history: Pub. No. MAN0030192 A.0

Revision	Date	Description
A.0	16 January 2024	New document for automation of the MagMAX™ FFPE DNA/RNA Ultra Kit using the Microlab™ NIMBUS™ Liquid Handler and KingFisher™ Presto Purification System.