sample prep



Your samples, powered by KingFisher instruments

Automated sample preparation for DNA, RNA, protein, or cells



KingFisher instruments are ...





Consistent

The unique instrument design, moving magnetic beads instead of liquids, leads to cleaner extractions and consistent results with every run



Convenient Easy to set up and run, or customize to fit your lab's needs



Versatile Enables more applications than any other sample preparation instrument



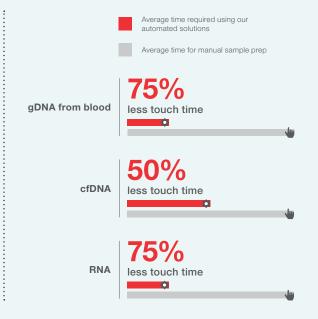
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Supported Backed by the industry's largest network of specialists dedicated to supporting these instruments

Why choose a KingFisher instrument?

Your samples, faster

Thermo Scientific[™] KingFisher[™] instruments save you valuable time by removing manual steps and reducing overall processing time, even when compared with other instruments.

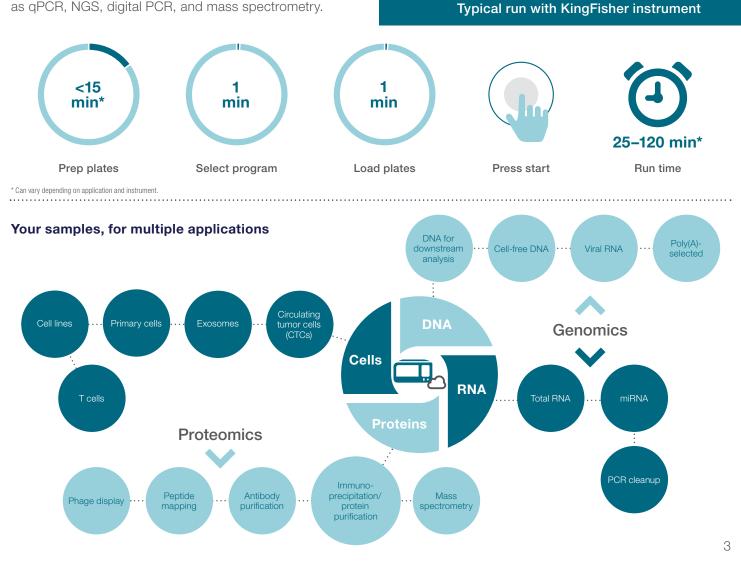


Your samples, consistently

KingFisher instruments reduce user processing errors while increasing the reproducibility of your results. Our data show that samples processed with KingFisher instruments have consistent results across runs and different users, which is important for more sensitive downstream applications such as qPCR, NGS, digital PCR, and mass spectrometry.

Your samples, more easily

KingFisher instruments offer optimized, easy-to-follow protocols for nearly every downstream application or sample type.



The KingFisher instrument experience

A complete system to automate sample preparation in your lab



Instrument Select a KingFisher instrument based on your throughput needs



Kits and reagents

Choose kits and reagents from trusted brands, such as Applied Biosystems[™] MagMAX[™] kits and Invitrogen[™] Dynabeads[™] reagents



Customize

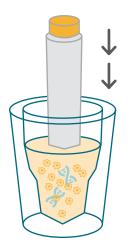
Use plastics, software, and interchangeable magnetic heads to customize and optimize your process



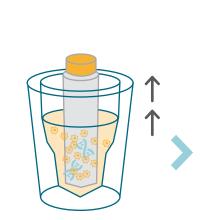
Support Contact dedicated KingFisher instrument specialists for application and instrument support

How KingFisher instruments work

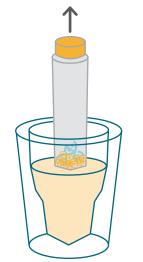
KingFisher instruments automate extraction of DNA, RNA, protein, and cells by moving magnetic beads (not liquids), leading to clean extractions and enabling consistent results. Using a simple process (bind, wash, elute), KingFisher instruments can automate the extraction of any analyte of interest with a bead on it.



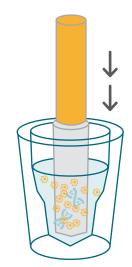
Magnetic beads mix with sample, binding to target



Magnetic rod is lowered into the solution; magnetic beads and target collect at the bottom of the tip comb



Magnetic rod retracts, bringing beads and target; can be positioned in another well



Beads are then released by moving the magnetic rods out of the tip comb; tip comb also facilitates the mixing of reagents with the beads as the magnetic head moves up and down

KingFisher instruments

KingFisher instruments are the most versatile sample preparation instruments in the lab, and are elegantly designed to support multiple applications.

- Various throughputs—process 6–96 samples per run depending on the instrument model
- Interchangeable formats—choose 24- or 96-well plates so you can process a wide range of input volumes
- **Protocol customization**—easily edit, modify, or create new protocols (touchscreen enabled for Thermo Scientific[™] KingFisher[™] Apex[™] instrument only)
- Optimized reagents-compatible with multiple magnetic-bead reagents
- **Barcoded plastics**—achieve optimal performance with specially designed plastics (for KingFisher Apex instrument only)

Find a model that meets your needs

Test a KingFisher platform in your lab

Sepcialists supporting the KingFisher instrument can provide an on-site demonstration of the system with your samples. They provide the instrument, consumables, and reagents from Thermo Fisher Scientific that are specific to your research needs. The demonstration includes instrument setup and use, protocol modification, and other FAQs. Find out more at thermofisher.com/ kingfisherdemo

KingFisher instrument:	Duo Prime	Flex	Арех	Presto
Instrument size	Compact benchtop	Benchtop	Benchtop	Benchtop—integrates with robotic liquid handler
Throughput level	Low to medium	High	High	Ultrahigh
Processing volume range	 50–1,000 μL: 12-pin magnet head 	 PCR plate (20–100 µL*), skirted 	 15–1,000 μL: 96 deep-well plate 	 50–1,000 μL: 96 deep- well plate
	 200–5,000 μL: 6-pin magnet head 	 20–200 μL: 96-well plate 50–1,000 μL: 96 deep- 	 15–200 µL: 96-well KingFisher standard plate 	 200–5,000 μL: 24 deep- well plate
		well plate	• 10-80 µL: 96-well PCR plate	• KingFisher 96 plate:
		 200–5,000 µL: 24 deep- well plate 	 30-5,000 μL: 24 deep-well plate 	50–150 μL
			• 30–200 µL: 96 storage tubes	
			• 200–1,000 µL: 24 storage tubes	
Samples per run	6 or 12	24 or 96	24 or 96	24 or 96
Customizable protocols	Yes	Yes	Yes, with touchscreen or PC software	Yes
Heating/cooling	• 10°C to 75°C (plate row block A)	From 5°C above ambient temperature to 115°C	 From 4°C above ambient temperature to 100°C 	From 5°C above ambient temperature to 115°C
	 4°C to 75°C (elution strip block) 		• Cooling down to 4°C	
Ultraviolet lamp	8 watts (up to 16 hr)	No	2 UV lamps, max 23 h 59 min	No
Additional details	For Research Use Only	For Laboratory Use	For Laboratory Use	For Laboratory Use

KingFisher Apex instrument features





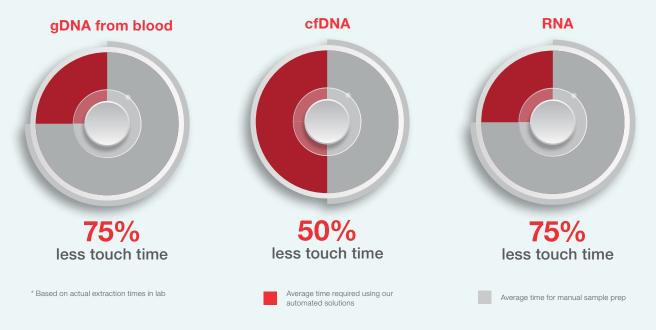


Enhanced performance

Achieve peak performance for purifying DNA, RNA, proteins, or cells, now with even greater flexibility for fast and reproducible results with almost any application.

- Elute in lower volumes (10 µL) for demanding downstream applications
- Purify 24 or 96 samples in 25-65 min
- Control heating and cooling to maintain sample integrity
- Elute in storage tubes and revisit samples later
- Safeguard against contamination with 2 UV lights

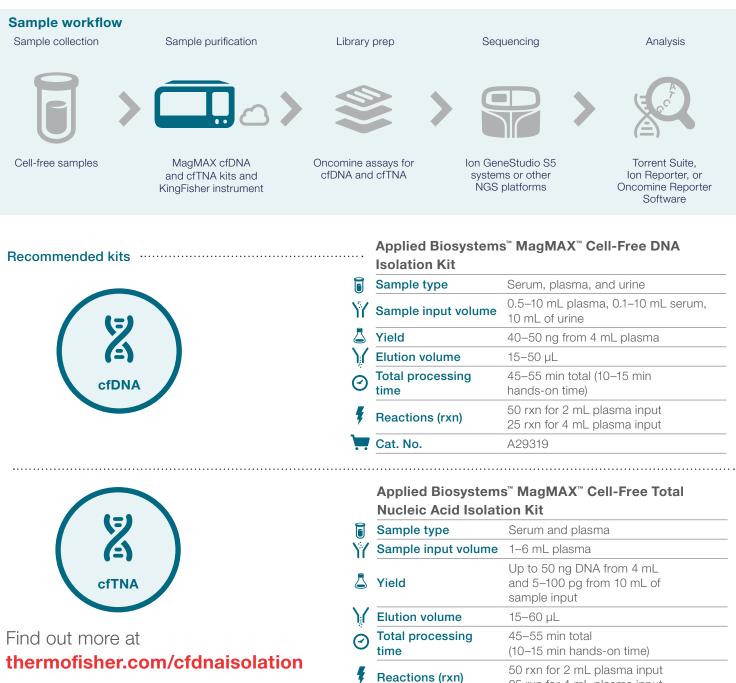
Sample prep as it should be-fast, flexible, consistent.*



Featured KingFisher instrument applications

Liquid biopsy for cancer research

Rapid purification of nucleic acids from cell-free samples for liquid biopsy research. Optimized specifically for enrichment of cfDNA and cell-free total nucleic acid (cfTNA), not gDNA, which means increased recovery and lower starting volumes. Elute in volumes compatible with Ion Torrent[™] Oncomine[™] assays.



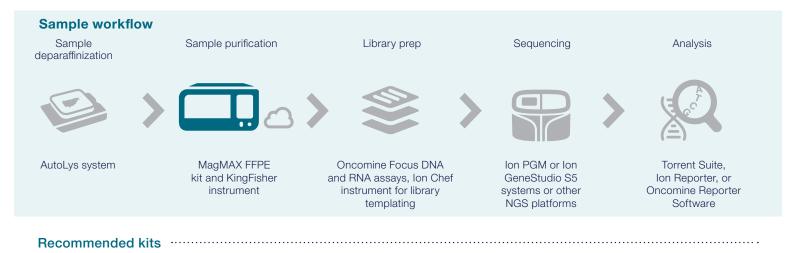
Cat. No.

25 rxn for 4 mL plasma input

A36716

Formalin-fixed, paraffin-embedded (FFPE) samples

Sequentially isolate DNA and RNA from FFPE samples and get high-quality gDNA yields comparable to fresh-frozen blood.



FFPE

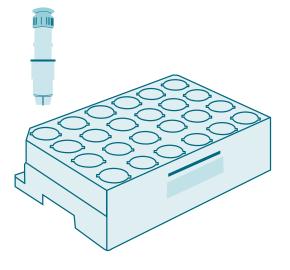
	Ultra Kit				
]	Sample type	FFPE tissue samples, such as resections, biopsies, and aspirates			
1	Sample input volume	5–40 µm standard input of slides or curls			
(Elution volume	20–50 μL			
)	Total processing time	20 min for DNA, 48 min for RNA			
	Reactions (rxn)	96 isolations (48 RNA and 48 DNA, or 96 DNA or 96 RNA)			
	Cat. No.	A31881			

Applied Biosystems[™] MagMAX[™] FFPE DNA/RNA

AutoLys system

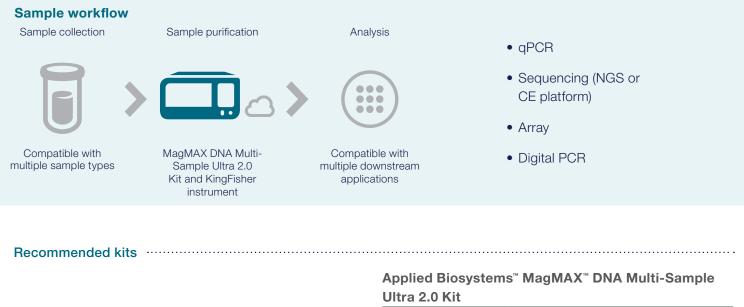
Speed up your deparaffinization process with the Applied Biosystems[™] AutoLys system. Comprised of pretreated tubes and a rack system to reduce pipetting steps, the system eliminates the need for hazardous chemicals and minimizes loss of tissue sample. **Note:** Not included with the Applied Biosystems[™] MagMAX[™] FFPE DNA/RNA Ultra Kit.

Find out more at **thermofisher.com/ffpeisolation**



DNA for downstream analysis

Extract high-quality DNA that is compatible with sequencing or array platforms, from a range of sample types. Choose from multiple protocols, but only two options for either large or small volume inputs, without normalization.

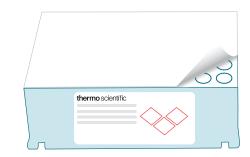




٦	Sample type	Multiple, including whole blood, swabs, tissue, and more		
Ŷ	Sample input volume	50 µL–2 mL		
4	Yield	1.5–4 µg (50 µL of blood) 2–12 µg (1 buccal swab)		
Y	Elution volume	50 µL–1 mL		
Ø	Total processing time	6–96 samples in 30–45 min depending on sample type		
ş	Reactions (rxn)	1 kit = 100 rxn of 50–400 μ L volume or 200 rxn of <200 μ L volume; bulk reagents sold separately		
	Cat. No.	A36570		

KingFisher instrument-ready reagents

Reduce your pipetting steps with new prefilled reagent plates for the Thermo Scientific[™] KingFisher[™] Duo Prime and Thermo Scientific[™] KingFisher[™] Flex instruments. Now, MagMAX DNA Multi-Sample Ultra 2.0 isolation reagents come prefilled into the plates that go in the KingFisher instrument. Just peel off the plate cover, add lysed samples, and load plates onto the instrument. Find out more at **thermofisher.com/kingfisherready**

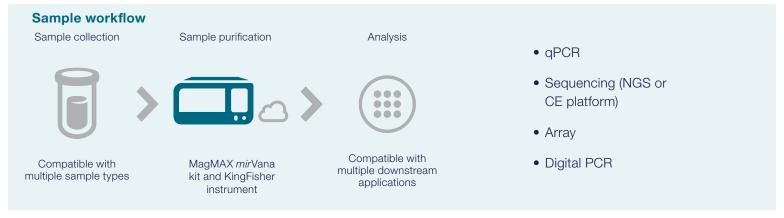


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Find out more at thermofisher.com/magmaxultra and thermofisher.com/kingfisherready

RNA for gene expression

Isolate total RNA, as well as small RNAs such as microRNA (miRNA), from a wide variety of sample types using a phenol-free extraction (no organic extraction).



Recommended kits



Applied Biosystems[™] MagMAX[™] *mir*Vana[™] Total RNA Isolation Kit

6	Sample type	Multiple, including plasma/serum, whole blood, tissue, cell culture, urine				
Ŷ	Sample input volume	50 μ L of blood, up to 50 mg of tissue, 1 x 10 ⁶ cells, 100 μ L of plasma or serum, 250 μ L of urine				
2	Yield	100 ng RNA from whole blood (50 μL) 600 ng from 5 mg mouse brain 2.5 μg from 5 mg mouse liver				
Y	Elution volume	50 µL				
0	Total processing time	1.5–2 hr total time (20 min hands-on time)				
Ŧ	Reactions (rxn)	96 rxn				
	Cat. No.	A27828				



Find out more at thermofisher.com/magmaxmirvana

Genetic testing

Speed up your processing of saliva samples for genetic testing. Recover DNA that is compatible with NGS and array platforms, from 96 samples, in 25 minutes.

Reagents were tested with the 10 most common saliva collection devices to confirm consistent results.



Recommended kits ...



Applied Biosystems[™] MagMAX[™] gDNA Saliva Kit

		8 8
0	Sample type	Fresh and preserved saliva
Ŷ	Sample input volume	200 µL–2 mL
٢	Yield	100 ng/µL saliva on average (yield is dependent on each individual donor)
Y	Elution volume	50 µL
Ô	Total processing time	25 min (5 min hands-on time)
ţ	Reactions (rxn)	100 rxn 500 rxn
	Cat. No.	A39059, A39060

Find out more at thermofisher.com/saliva

Infectious disease and microbiome research

Sample workflow

Sample collection

Compatible with

Sample purification



MagMAX microbiome kit and KingFisher multiple sample types instrument



Analysis

Compatible with multiple downstream applications

Microbiome research

• Enzyme-based digestion

additional processing steps

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- Viral/pathogen
- qPCR
- Microbiome
- Sequencing
- Digital PCR

• Recover from a wide range of microorganisms without

Virus and pathogen detection

- Recovery-compatible with low-titer samples
- No carrier required—less interference with NGS and fewer steps required

Recommended kits



Applied Biosystems[™] MagMAX[™] Microbiome **Ultra Nucleic Acid Isolation Kit**

J	Sample type	Stool, soil, swabs, urine, and saliva
		100 mg of stool, 250 mg of soil, 400 μL of biofluid
5	Yield	40–60 μ g of stool, 5–10 μ g of soil
(Elution volume	50–200 µL or more
Ð	Total processing time	50 min for stool, 70 min for soil and biofluid
ţ	Reactions (rxn)	100 rxn
	Cat. No.	A42357 (with plate), A42358 (with tubes)

Applied Biosystems[™] MagMAX[™] Viral/Pathogen Nucleic Acid Isolation Kit

0	Sample type	Plasma, whole blood, urine, BAL, VTM, serum, CSF, and saliva
Y	Sample input volume	200 µL–2 mL
	Detection limit	≥50 copies
Y	Elution volume	50–100 μL
Ó	Total processing time	40 min
ţ	Reactions (rxn)	100 rxn
X	Cat. No.	A42352

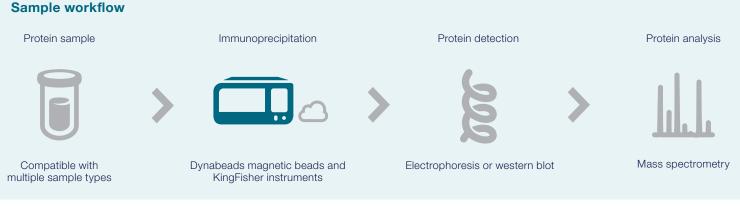
Applied Biosystems[™] MagMAX[™] Viral/Pathogen **Ultra Nucleic Acid Isolation Kit**

ī	Sample type	Swabs, plasma, whole blood, urine, BAL, VTM, serum, CSF, and saliva
\$	Microbes	Lysed virus, yeast, fungus, gram-negative and gram- positive bacteria
Y	Sample input volume	200 µL–2 mL
\$	Detection limit	≥50 viral copies, ≥1,000 CFU (bacteria or fungi)
¥	Elution volume	60–100 μL
\odot	Total processing time	65 min
Ŧ	Reactions (rxn)	100 rxn
	Cat. No.	A42356

Find out more at thermofisher.com/magmaxmicrobiome and thermofisher.com/magmaxviralpathogen

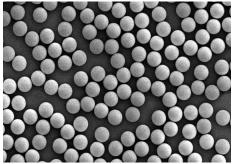
Immunoprecipitation (IP)

KingFisher instruments with Invitrogen[™] Dynabeads[™] magnetic beads offer the best balance of high yield and reproducibility with low nonspecific binding, which is one reason they have become the gold standard for immunoprecipitation using magnetic beads.

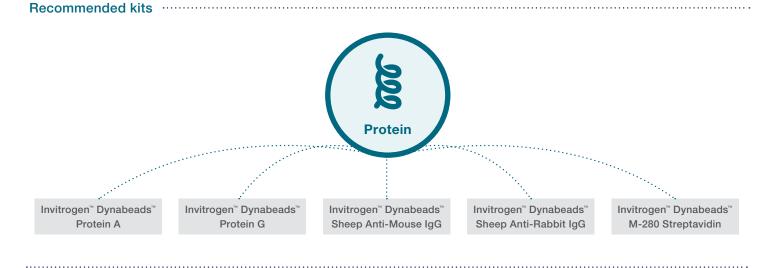


Dynabeads magnetic beads for IP

- Automated IP in 40 min
- High yield with low antibody consumption and low nonspecific binding
- Rapid target binding; short incubation and separation times



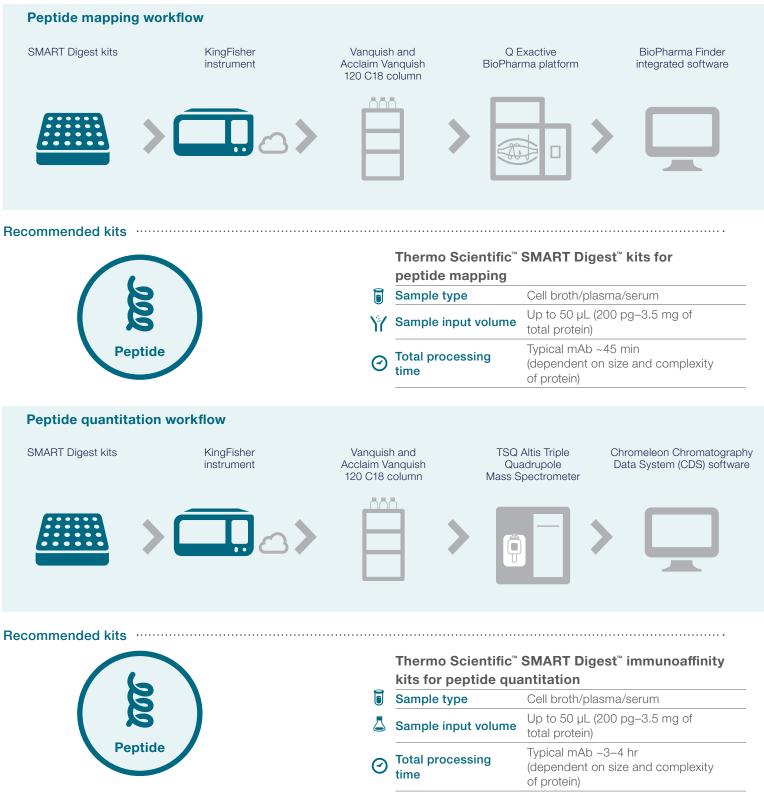
Dynabeads products are the most uniform monodisperse superparamagnetic beads on the market, manufactured with highly controlled product qualities to help ensure the highest degree of reproducibility.



Find out more at thermofisher.com/immunoprecipitation

Peptide mapping and quantitation

Amazingly fast, simple, reproducible, and sensitive protein digestion with immunoaffinity capture, giving you higher confidence in your chromatography and liquid chromatography-mass spectrometry (LC-MS) results.

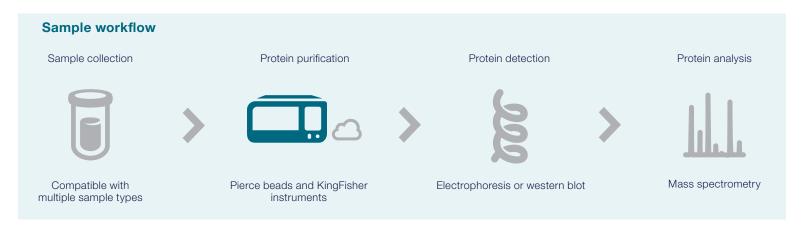


Find out more at thermofisher.com/smartdigest

Protein purification



Thermo Scientific[™] Pierce[™] magnetic agarose beads support a variety of ligands for IP, co-IP, pull-down, and other high-throughput affinity screening applications utilizing immobilized protein A/G, Ni-NTA, glutathione, and anti-FLAG.



Recommended kits



Thermo Scientific[™] Pierce[™] magnetic agarose beads

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- **High binding**—up to 100-fold greater binding capacity than traditional magnetic beads
- More choices—multiple ligands available for different purification strategies, including immobilized protein A/G, Ni-NTA, glutathione, and anti-FLAG
- Automation-compatible—can be used with magnetic particle processors for higher-throughput applications
- Flexible—can scale up or down as needed using adaptable protocols

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Learn more at thermofisher.com/mag-agarose

Additional KingFisher applications



mRNA

Target and capture the mRNA transcriptome from an extremely wide variety of crude starting samples using Invitrogen[™] Dynabeads[™] mRNA DIRECT[™] kits. These kits are designed for simple and rapid isolation of pure, intact poly(A) RNA directly from the crude lysate of animal and plant cells and tissues. The isolated mRNA is suitable for use in all downstream applications.

- Fast-15 minute procedure yields pure, intact mRNA
- **Sensitive**—enables cDNA synthesis and cDNA library construction from ultrasmall starting samples

Plant DNA or RNA

Use the Applied Biosystems[™] MagMAX[™] Plant DNA and RNA kits for automation-ready purification of DNA and RNA from a wide variety of plant species.

- Purification of total RNA from a wide variety of plant species and tissue types, including plant fungus
- Purified RNA is free of proteins, nucleases, and other contaminants or inhibitors
- Optimized for the isolation of DNA from 10–100 mg plant samples

Recommended kits



Dynabeads mRNA DIRECT kits

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5	Sample type	Blood, cells, FFPE and fixed samples, liquid samples (e.g., serum), plant samples, RNA, tissue, viral samples, yeast				
Ŷ	Sample input volume	Up to 20 x 10° cells 2–200 mg animal tissue 4–400 mg plant tissue				
4	Yield	2 µg of mRNA per 1 mg of Dynabeads oligo(dT)				
Y	Elution volume	10–100 μL				
\odot	Total processing time	15 min				
Ę	Reactions (rxn)	20 or 40 rxn				
	Cat. No.	61011, 61012				

MagMAX Plant DNA Kit and RNA Kit



		DNA	RNA		
٦	Sample type	Plant tissue			
Ŷ	Sample input volume	Up to 100 mg			
٢	Yield	Varies based or	n starting material		
0	Total processing time	<40 min for DNA	Up to 75 min for RNA		
Ŧ	Reactions (rxn)	96 or 384 rxn			
•	Cat. No.	A32549, A32580	A33784, A33899		

Customize your KingFisher system

Customize your protocols

Thermo Scientific[™] BindIt[™] Software allows you to easily create, modify, and store your protocols.

- Included with purchase of your KingFisher instrument
- Modify prewritten protocols or create your own to handle more applications

Search our extensive library of automated protocols at thermofisher.com/kingfisherprotocols

Interchangeable magnetic heads

The magnetic head can be easily switched without tools, depending on your plate setup, allowing you to run large or small volumes.

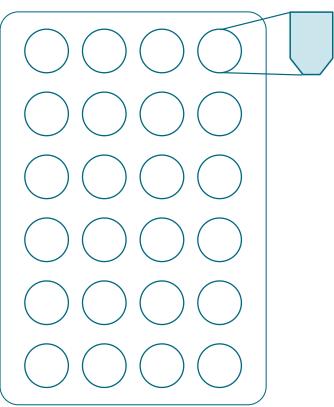


KingFisher plate formats

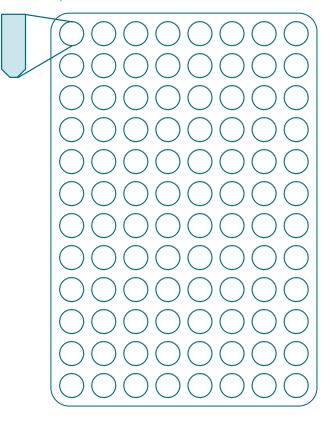
KingFisher instruments support a 24- or 96-well plate format for greater flexibility of input volume.

24 deep-well plates

200–5,000 µL



96 deep-well plates 50–1,000 µL



KingFisher plastics for KingFisher instruments

Designed for KingFisher instruments

Both the yield and quality of isolated protein or nucleic acid are significantly improved with special plates and tip combs designed for KingFisher systems. • Sterile plastics come with a purity certificate and are guaranteed to be free of RNases, DNases, and contamination from DNA or endotoxins

- Made of polypropylene
- Low binding affinity for biomolecules, ideal for magnetic particle processing

KingFisher instrument:	Duo Prime	Flex	Apex	Presto	Cat. No.
Plastics for 96 deep-well format					
KingFisher Apex 96 combi tip comb			\checkmark		97002570
KingFisher 96 deep-well plate, barcoded			\checkmark		95040450B
KingFisher 96 deep-well plate, sterile, barcoded			\checkmark		95040460B
KingFisher 96 tip comb for deep-well magnet, barcoded			\checkmark		97002534B
KingFisher 96 deep-well tip comb and plate, sterile, barcoded			\checkmark		97002820B
Nunc 96 storage tubes*			\checkmark		374086
KingFisher 96 deep-well plate	\checkmark	\checkmark		\checkmark	95040450
KingFisher 96 deep-well plate, sterile	\checkmark	\checkmark		\checkmark	95040460
KingFisher 96 tip comb for deep-well magnet		\checkmark		\checkmark	97002534
KingFisher 96 deep-well tip comb and plate, sterile		\checkmark		\checkmark	97002820
Plastics for 96 standard and PCR formats					
KingFisher Apex 96 PCR tip comb			\checkmark		97002560
KingFisher 96 microplate (200 μ L), barcoded			\checkmark		97002540B
KingFisher 96 tip comb for KingFisher magnets, barcoded			\checkmark		97002524B
PCR plate, 96 deep-well, clear, clear wells*			\checkmark		AB2396
PCR plate, 96 deep-well, semi-skirted, low profile, clear wells*			\checkmark		AB2496
KingFisher 96 microplate (200 µL)		\checkmark		\checkmark	97002540
PCR plate, skirted (or similar PCR plate)*		\checkmark			AB1300
KingFisher 96 tip comb for KingFisher magnets		\checkmark			97002524
KingFisher 96 tip comb for PCR magnets		√			97002514

* Recommended plastics.

KingFisher plastics for KingFisher instruments

KingFisher instrument:	Duo Prime	Flex	Арех	Presto	Cat. No.
Plastics for 24 deep-well format					
KingFisher Apex 24 combi tip comb			\checkmark		97002580
KingFisher 24 deep-well plate, barcoded			\checkmark		95040470B
KingFisher 24 deep-well plate, sterile, barcoded			\checkmark		95040480B
KingFisher 24 deep-well tip comb and plate, barcoded			\checkmark		97002610B
KingFisher 24 deep-well tip comb and plate, sterile, barcoded			\checkmark		97002620B
Nunc 24 storage tubes*			\checkmark		374323
KingFisher 24 deep-well plate	\checkmark	\checkmark		\checkmark	95040470
KingFisher 24 deep-well plate, sterile	\checkmark	\checkmark		\checkmark	95040480
KingFisher 24 deep-well tip comb and plate		\checkmark		\checkmark	97002610
KingFisher 24 deep-well tip comb and plate, sterile		\checkmark		\checkmark	97002620
Plastics available for Duo Prime instrument only	у				
KingFisher Duo Prime 6-tip combs and 24 deep- well plate (12 pieces of 24 deep-well plates, each including 4 tip combs)	\checkmark				97003510
KingFisher Duo Prime 12-tip comb, for 96 deep- well plate	\checkmark				97003500
KingFisher Duo Prime 12-tip elution strip	\checkmark				97003520
KingFisher Duo Prime elution strip cap for 12 pin magnet	\checkmark				97003540
Cap for elution strip	\checkmark				97003540
KingFisher combi pack for microtiter 96 deep-well plate, includes 8 each of: • 96 deep-well plate • 12-tip comb • Elution strip • Cap for elution strip	~				97003530

* Recommended plastics.

KingFisher instrument services and support



Instrument and application specialists

Whether servicing your KingFisher purification system or addressing your workflow application questions, our more than 1,000 trained professionals make up the industry's largest network, ready to assist you when you need it.



Quick-start training

The KingFisher system includes SmartStart Orientation to get you up and running quickly in your lab. The orientation includes basic familiarization and setup with online instrument management and includes on-site training with standard kits.



Warranty and service plans

Every KingFisher system comes with a one-year warranty. Extendedcoverage service plans are also available at the time of instrument purchase. Whether your laboratory requires the highest service levels and adherence to stringent regulatory guidelines, or you need to maximize performance with a limited budget—or anything in between—we'll work with you to develop a solution that best suits your needs.

Find out more at **thermofisher.com/instrumentservices** or contact us at **thermofisher.com/contactus**

Ordering information

Product	Cat. No.
KingFisher instruments	
KingFisher Apex Purification System with 96 PCR Head**	5400910
KingFisher Apex Purification System with 96 Combi Head**	5400920
KingFisher Apex Purification System with 96 Deep-Well Head**	5400930
KingFisher Apex Purification System with 24 Combi Head**	5400940
KingFisher Flex Purification System with 96 PCR Head**	5400610
KingFisher Flex Purification System with 96 KingFisher Head**	5400620
KingFisher Flex Purification System with 24 Deep-Well Head**	5400640
KingFisher Flex Purification System with 96 Deep-Well Head**	5400630
KingFisher Duo Prime Purification System	5400110
KingFisher Presto Purification System with 24 Deep-Well Head**	5400840
KingFisher Presto Purification System with 96 Deep-Well Head**	5400830
Nucleic acid purification products	
KingFisher Duo–Ready DNA Ultra 2.0 Prefilled Plates	A36584
KingFisher Flex-Ready DNA Ultra 2.0 Prefilled Plates	A36586
MagMAX mirVana Total RNA Isolation Kit	A27828
MagMAX DNA Multi-Sample Ultra 2.0 Kit*	A36570
MagMAX Saliva gDNA Isolation Kit*	A39060
MagMAX Cell-Free DNA Isolation Kit*	A29319
MagMAX Cell-Free Total Nucleic Acid Isolation Kit*	A36716
MagMAX FFPE DNA/RNA Ultra Kit*	A31881
AgMAX Microbiome Ultra Nucleic Acid Isolation Kit*	A42357, A42358
MagMAX Viral/Pathogen Nucleic Acid Isolation Kit*	A42352
MagMAX Viral/Pathogen Ultra Nucleic Acid Isolation Kit*	A42356
MagMAX Plant DNA Isolation Kit*	A32549
MagMAX Plant RNA Isolation Kit	A33784
Dynabeads mRNA DIRECT Purification Kit	61011
mmunoprecipitation and protein products	
Dynabeads Protein A	10002D
Dynabeads Protein G	10004D
Dynabeads M-280 Sheep Anti-Mouse IgG	11202D
Dynabeads M-280 Sheep Anti-Rabbit IgG	11204D
Dynabeads M-280 Streptavidin	11206D
Dynabeads His-Tag Isolation and Pulldown	10103D
Pierce Streptavidin Magnetic Beads	88817
Pierce Protein A/G Magnetic Beads	88803
Pierce Protein A/G Magnetic Agarose Beads	78609
Pierce Ni-NTA Magnetic Agarose Beads	78605
Pierce Anti-DYKDDDDK Magnetic Agarose Beads	A36797
Pierce Glutathione Magnetic Agarose Beads	78601
SMART Digest kits for peptide mapping and quantitation	60109-101-MB-
	60109-109-MB
SMART Digest IA kits for peptide quantitation	
	60110-103-

* May be purchased as individual bulk reagents.

** For Laboratory Use.

More beads, more applications

There are many more magnetic bead kits available that can be automated on KingFisher instruments. Find the right kit for your application at **thermofisher.com/kingfisherkits**



Find out more at thermofisher.com/kingfisher



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