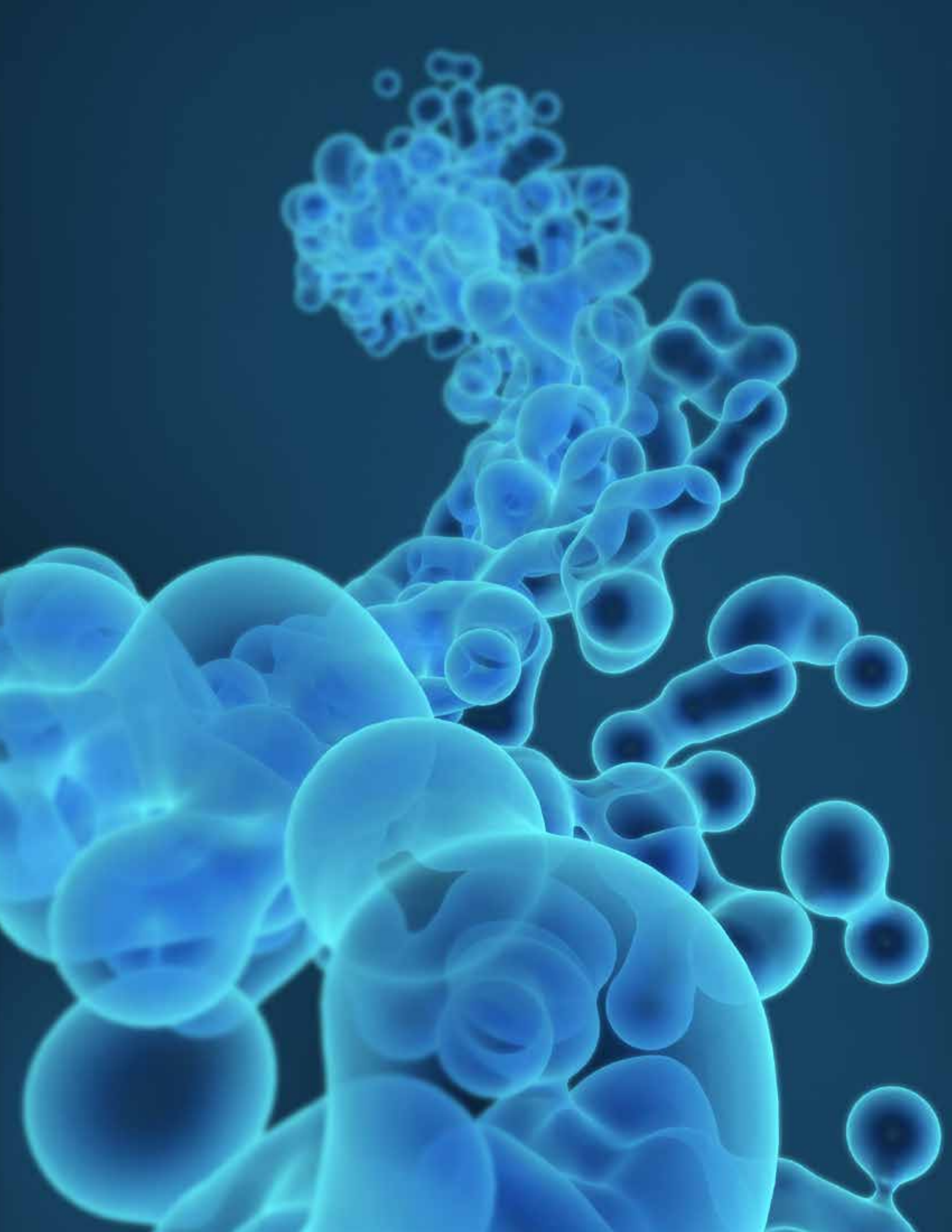
KingFisher purification systems

Automated, scalable isolation of protein and nucleic acid

ThermoFisher SCIENTIFIC



Contents

Introduction to KingFisher technology

Complete purification system for nucleic acids, proteins, and cells

Successful downstream analysis depends on high-quality, reproducible purification of nucleic acids, proteins, and cells. Thermo Scientific™ KingFisher™ purification systems are designed to deliver high-quality results with minimal hands-on time, helping you automate a significant part of your workflow.

- Choose from five distinct systems to meet your application and throughput needs
- Optimized kits streamline the purification workflow for a wide variety of sample types
- Thermo Scientific™ BindIt™ Software enables you to create customized protocols for additional flexibility
- Specially designed consumables allow efficient sample processing

Magnetic separation technology

KingFisher systems use permanent magnetic rods and disposable tip combs to collect, transfer, and mix magnetic particles (Figure 1):

1. When the magnetic rod—sheathed inside the tip comb—is lowered into the solution, magnetic beads collect at the bottom of the tip comb
2. The tip comb is then positioned in a different row or plate, and the beads are released by moving the magnetic rods out of the tip comb
3. The tip comb facilitates the mixing of reagents with the beads as the magnetic head moves up and down

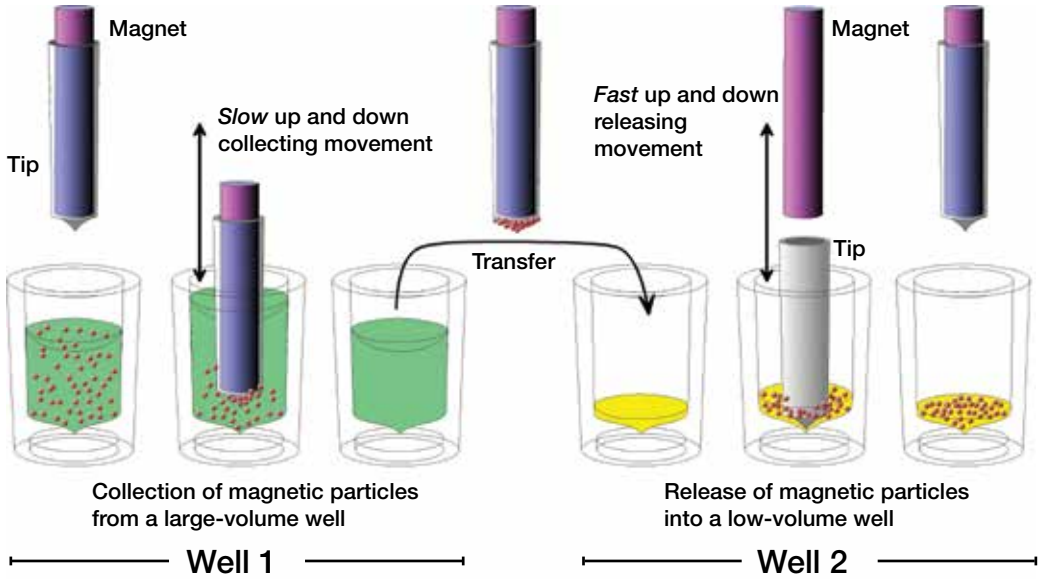


Figure 1. KingFisher™ magnetic separation technology.

Consumables for KingFisher systems

Made of polypropylene, consumables for KingFisher systems are ideal for magnetic particle processing due to their low binding affinity for biomolecules. Both the yield and quality of the isolated protein or nucleic acid are significantly improved with special plates and tips designed for KingFisher systems.

Applications and software

Nucleic acid purification

When you use Applied Biosystems™ MagMAX™ kits on KingFisher™ Duo Prime or KingFisher™ Flex systems, you will experience a simple, fast workflow that is designed to provide pure nucleic acid ready for downstream applications such as real-time PCR and next-generation sequencing.

The primary benefits of running MagMAX kits on the KingFisher Flex system with 24 deep-well head include:

- Nucleic acid extraction from larger sample input volumes
- Consistent, high-quality nucleic acid recovery from a wide variety of sample types
- Cross-contamination control, thanks to bead transfer technology

Immunoprecipitation and protein purification

Invitrogen™ Dynabeads™ products pioneered biomagnetic technology and help ensure that you get the best balance of high yield and reproducibility with low nonspecific binding and cost. This balance is one reason why Dynabeads products have become the gold standard for immunoprecipitation (IP) using magnetic beads and are well suited for automation.

The primary benefits of running Dynabeads products on the KingFisher system include:

- **Low background**—little to no nonspecific binding, no preclearing required, and high signal-to-noise ratio
- **Highly reproducible**—uniform beads help ensure consistent results
- **Flexible**—products for IP, co-IP, pull-down, and ChIP assays; ideal for manual and automated protocols
- **Antibody savings**—all binding occurs on the smooth outer surface of the beads, which conserves precious antibody and supports a cost-efficient solution per sample
- **Highly sensitive**—Dynabeads technology is the most-cited method for sensitive applications, such as ChIP and IP of low-abundance proteins

BindIt Software and protocols

Create and store protocols in a PC database using BindIt Software for KingFisher systems. Once a protocol has been created, the protocol can either be transferred to your KingFisher system memory or executed directly from the software. Based on a step list, the parameters for the active step are shown on the screen. All steps have default parameters that can be changed according to the demands of the application. Alternatively, download and execute protocols from our extensive library.

- Compatible with open-platform KingFisher systems
- Modify prewritten protocols or create your own to handle more applications
- Allows specific plates and reagents to be defined in the plate layout
- Generates status reports that include run log, plate layout, and step parameters
- Enables the KingFisher Flex system to interface with liquid handling, robotic, and plate-stacking instruments, providing a fully automated solution and the highest possible throughput
- Get updated protocols for free as they become available

KingFisher Flex system

The Thermo Scientific™ KingFisher™ Flex Purification System provides highly versatile and reproducible purification of 24 or 96 samples per run. It can be used with a variety of reagents, including Dynabeads products or MagMAX nucleic acid extraction kits, enabling scientists to process samples for a variety of applications.

Features of the KingFisher Flex system

- Easy to set up for a fast start
- User-friendly graphical interface
- BindIt Software allows programmable instrument control and protocol modification, creation, and upload*
- High-speed purification of nucleic acids, proteins, and cells
- High-throughput system that processes up to 96 samples and drastically reduces hands-on time
- Sample volume is expanded with the 24-well format

Optimized plastic consumables

24 deep-well plate

- Allows total volume of 200–5,000 µL

96 deep-well plate

- Allows total volume of 50–1,000 µL

96-well microplate

- Allows volume of 50–200 µL (with deep-well head)

Specifications	
Applications	DNA and RNA isolation from various starting materials, proteomic applications, cell isolation
Samples per run	96 or 24 samples
Plastic consumables	96 deep-well plate 24 deep-well plate 96-well plate
Volume range	50–1,000 µL, 96 deep-well plate 200–5,000 µL, 24 deep-well plate 20–200 µL, 96-well plate
Heating temperature	From 5°C above ambient temperature to 115°C
Internal memory	Space for about 500 protocols
Protocol import	Using BindIt Software
Computer interface	RS-232
Size (W x D x H)	680 x 600 x 380 mm (26.8 x 23.6 x 15 in.)
Weight	28 kg (62 lb.)

* Compatible with Windows™ 7 and 8 operating systems.

KingFisher Duo Prime system

The Thermo Scientific™ KingFisher™ Duo Prime Purification System offers an economical option for automated nucleic acid extraction and protein purification from up to 12 samples at a time and 24 samples per load using magnetic beads. Combining the KingFisher Duo Prime system with Dynabeads or MagMAX nucleic acid extraction kits allows a diverse range of sample inputs and sample types to be processed.

Features of the KingFisher Duo Prime system

- Easy installation
- User-friendly graphical interface
- Preloaded protocols for MagMAX nucleic acid extraction kits
- Automated purification of nucleic acids, proteins, and cells from a wide range of starting material
- Up to 5 mL sample volumes with 6-well format
- Easy-to-use BindIt Software allows instrument control, protocol creation, and modification
- Built-in UV lamp delivers easy and effective decontamination
- Optional bar-code reader allows users to track samples directly in the internal software
- Compact system that easily fits on a bench

Optimized plastic consumables

24 deep-well plate

- Compatible with 6-pin magnetic head
- Allows total volume 200–5,000 µL

96 deep-well plate

- Compatible with 12-pin magnetic head
- Allows total volume of 50–1,000 µL
- 12-well elution strip for total volume of 30–130 µL

96-well microplate

- Compatible with 96 deep-well magnetic head
- Allows volumes of 50-200 µL (with deep-well head)

Specifications	
Applications	DNA and RNA isolation from various starting materials, proteomic applications, cell isolation
Sample per run	Up to 12 with 12-pin magnet head Up to 6 with 6-pin magnet head
Max sample load	24
Plastic consumables	96 deep-well plate 24 deep-well plate 1 x 12 elution strip
Volume range	30–1,000 µL (12-pin magnet head) 200–5,000 µL (6-pin magnet head)
Heating/cooling temperature	10˚C to 75˚C, instrument in RT (plate row A) 4˚C to 75˚C, instrument in (elution row A)
UV lamp	8 W
UV exposure time	Up to 16 hours
Internal memory	Space for about 200 protocols
Protocol import	Using Bindt Software or USB memory device
Computer interface	USB
Size (W x D x H)	400 x 460 x 340 mm (15.7 x 18.1 x 13.4 in.)
Weight	17 kg (37.5 lb.)

Nucleic acid purification

The Applied Biosystems™ MagMAX™ product line is optimized to work with KingFisher technology. MagMAX™ magnetic bead technology provides scalable, reproducible recovery of high-quality nucleic acids suitable for a broad range of applications. Kits are available to recover total RNA, microRNA (miRNA), mRNA, genomic DNA, and cell-free DNA.

Total RNA

The isolation of total RNA, including small RNA such as miRNA, from a wide variety of sample matrices is possible with the Applied Biosystems™ MagMAX™ *mir*Vana™ Total RNA Isolation Kit (Figure 2). MagMAX magnetic bead technology helps ensure reproducible recovery of high-quality RNA that is suitable for a broad range of applications, including RT-qPCR with Applied Biosystems™ TaqMan™ miRNA Assays.

The magnetic bead–based purification format allows you to easily process 6–96 samples at once when used with the KingFisher Duo Prime or KingFisher Flex systems. Alternatively, samples can be processed manually using a magnetic stand.

Features of the MagMAX *mir*Vana Total RNA Isolation Kit

- Versatility for most applications involving RNA isolation and downstream analysis
- Automation-ready, phenol-free extraction
- Streamlined protocols for numerous noninvasive biological samples as well as tissues and cell culture
- Recovery of pure miRNA compatible with miRNA-Seq and RT-qPCR methods that utilize the Applied Biosystems™ TaqMan™ Advanced miRNA cDNA Synthesis Kit and TaqMan™ Advanced miRNA Assays

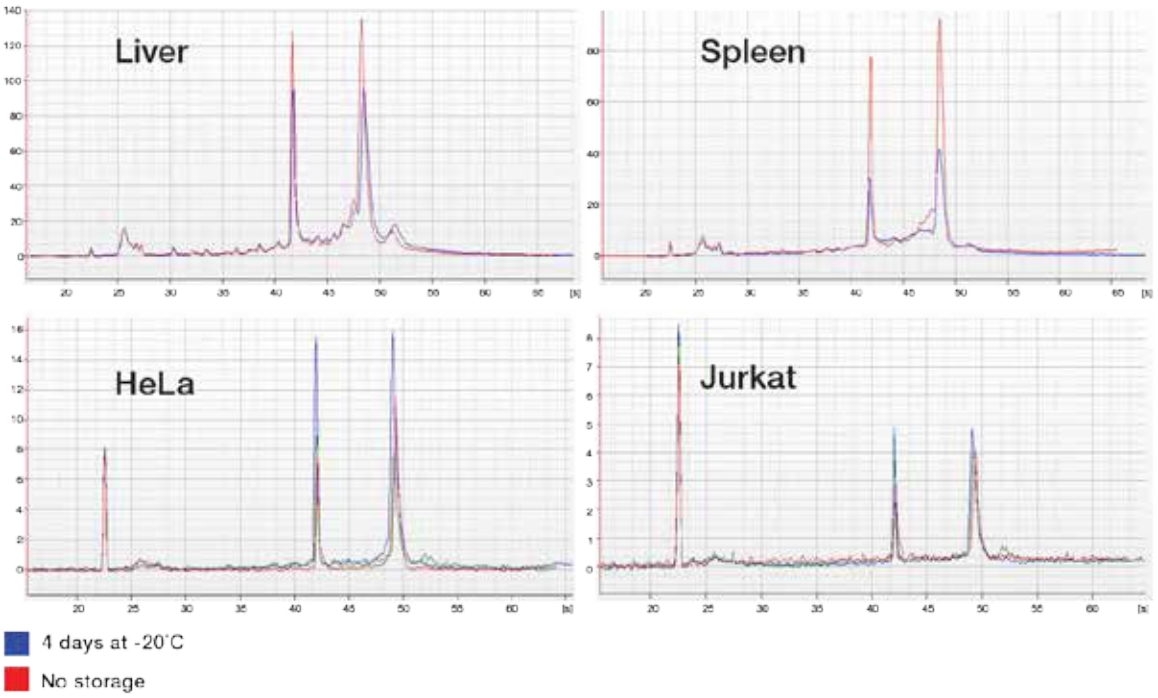


Figure 2. Analysis of RNA quality. Total RNA, including small RNA, was isolated with the MagMAX *mir*Vana Total RNA Isolation Kit from fresh sample lysates or after storage at –20°C for 4 days. Equal volumes of each were then run on the Agilent™ 2100 Bioanalyzer™ instrument. The electropherograms are nearly identical between the two methods, demonstrating minimal loss of RNA integrity due to storage.

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

Genomic DNA

The demands for DNA yield and purity have become more stringent with the development of new analytical methods and technologies, such as high-throughput genotyping and next-generation sequencing platforms. The Applied Biosystems™ MagMAX™ DNA Multi-Sample Ultra Kit meets the challenge by delivering highly pure DNA that is free of nucleases, proteins, and other inhibitors of downstream enzymatic reactions.

The MagMAX DNA Multi-Sample Ultra Kit is optimized to isolate genomic DNA (gDNA) from a variety of samples, such as whole blood, buccal cells, saliva, urine, blood cards, mouth rinse, and tissue. gDNA purified with the kit is ideal for qPCR applications on sensitive, scalable platforms such as the Applied Biosystems™ QuantStudio™ 12K Flex Real-Time PCR System with OpenArray™ Block and AccuFill™ System. The magnetic bead–based purification format allows you to easily scale from processing 12 to 500 samples a day, making it the ideal choice for pharmacogenomics (PGx) studies.

Features of the MagMAX DNA Multi-Sample Ultra Kit

- Streamlined protocols for numerous noninvasive biological samples
- Optimized to provide DNA yields suitable for OpenArray™ and Ion AmpliSeq™ applications
- Packaged for high-throughput needs

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

FFPE DNA/RNA Ultra Kit

The Applied Biosystems™ MagMAX™ FFPE DNA/RNA Ultra Kit is designed for sequential isolation of DNA and RNA from the same formaldehyde- or paraformaldehyde-fixed, paraffin-embedded (FFPE) tissue sample. The DNA and RNA are recovered in separate eluates, and both are compatible with a broad range of applications, including real-time PCR and next-generation sequencing. The isolation of RNA and DNA from the same FFPE sample makes this kit an ideal method of sample preparation for Ion Torrent™ Oncomine™ Comprehensive and Oncomine™ Focus assays.

Features of the MagMAX FFPE DNA/RNA Ultra Kit

- Flexible design that permits both manual and automated isolation of RNA and DNA
- Minimal requirement of 5 µm section or curl input
- Capable of processing 40 µm FFPE sections or curls; greater than 40 µm sections can be processed with an alternative protocol
- Compatible with targeted RNA and DNA sequencing panels
- Contains Invitrogen™ Dynabeads™ MyOne™ Silane for consistent isolation of RNA, miRNA, and DNA
- Alternative protocols for the isolation of RNA or DNA only

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

Cell-free DNA

Circulating cell-free DNA (cfDNA) is DNA that is found in the bloodstream. cfDNA can be captured from biological samples such as blood or serum for disease analysis and is suitable for a range of research applications such as real-time PCR, digital PCR, and next-generation sequencing. The Applied Biosystems™ MagMAX™ Cell-Free DNA Isolation Kit is designed for enrichment of small (<300 bp) cfDNA from biological samples. MagMAX magnetic bead technology helps ensure reproducible recovery of high-quality DNA and allows you to easily process a wide range of sample input volumes (500 µL to 10 mL).

When used with KingFisher Duo Prime or KingFisher Flex systems, 6–24 plasma or serum samples of 2 mL input volume can be isolated at once (Figure 3). Alternatively, samples can be processed manually with the use of a magnetic stand.

Features of the MagMAX Cell-Free DNA Isolation Kit

- Automation-ready, phenol-free extraction
- Fast procedure that allows 6–24 samples to be processed in 40 minutes or less when used with the KingFisher Duo Prime or KingFisher Flex system with a 24 deep-well head
- Flexible protocol that accommodates sample volume inputs ranging from 500 µL to 10 mL of plasma, serum, or urine
- Elution volumes ranging from 15 µL to 50 µL

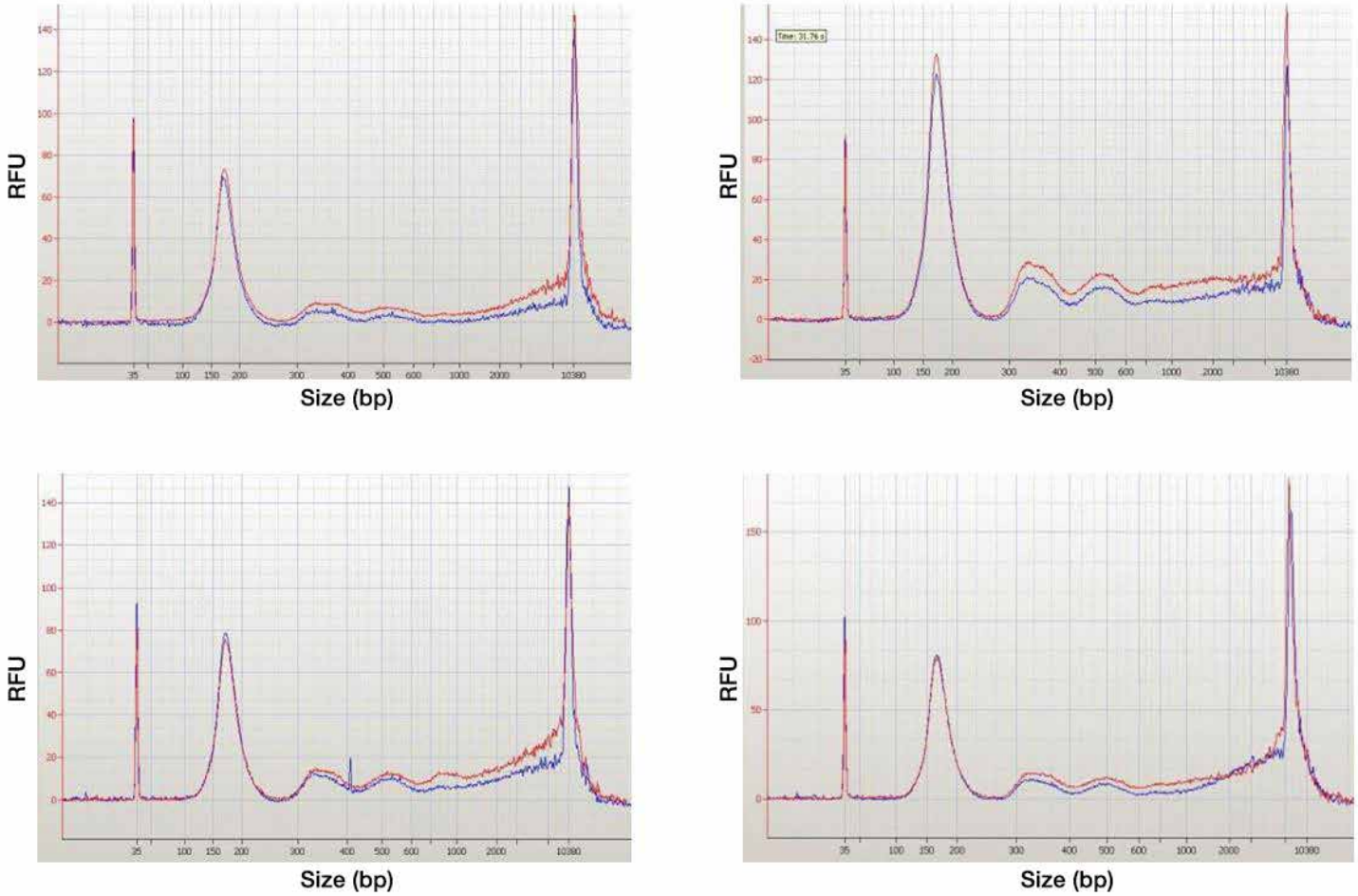


Figure 3. Automated cfDNA isolation using KingFisher systems. Overlapping traces for cfDNA isolated with the KingFisher Flex (red) and KingFisher Duo Prime (blue) systems are shown.

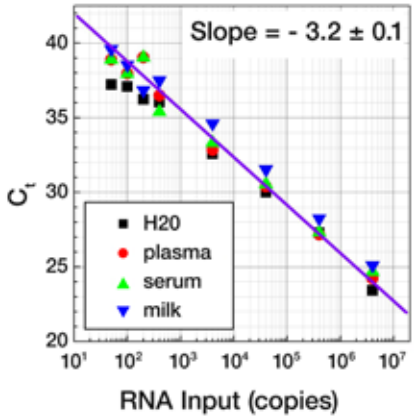
Find out more at **thermofisher.com/cfdnaisolation**

Pathogen RNA and DNA

Viral analysis of biological and environmental samples requires the use of advanced technologies for greater assurance of assay effectiveness. Molecular technologies are essential tools for rapid detection and identification of the most significant viruses. The Applied Biosystems™ MagMAX™ Pathogen RNA/DNA Kit enables purification of RNA and DNA from viruses and easy-to-lyse bacteria and parasites using magnetic particle technology in a 96-well format. PCR inhibitors are effectively removed in the process, reducing false-negative results and making the resulting nucleic acid ideal for qPCR and RT-qPCR applications.

Features of the MagMAX Pathogen RNA/DNA Kit

- **Convenience and flexibility**—one kit for RNA and DNA, suitable for a wide range of sample types and sample input volumes
- **Increased confidence in your results**—fewer false-negatives due to effective PCR inhibitor removal
- **Improved workflow efficiency**—process 96 samples in approximately 45 minutes using the KingFisher system with 96 deep-well head
- **Higher yield and purity**—magnetic particles bind nucleic acids more efficiently and are more thoroughly washed than glass fiber filters, resulting in higher yield and purity of RNA and DNA
- **Optimized protocols**—no sample cross-contamination has been observed due to extensive optimization of the methods developed for use on the KingFisher system with 96 deep-well head



mRNA

Only 1–5% of the total RNA in a typical mammalian cell is poly(A) RNA or mRNA. However, it is possible to specifically 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.

Features of the Dynabeads mRNA DIRECT kits

- **Fast**—15-minute procedure yields pure, intact mRNA
- **Highly pure mRNA isolation**—optimal choice upstream of cDNA synthesis
- **Sensitive mRNA isolation**—enables cDNA synthesis and cDNA library construction from ultra-small starting samples
- **Convenient**—methods for Dynabeads mRNA DIRECT kits are pre-loaded onto the KingFisher Flex system with 96 deep-well head

Immunoprecipitation and protein purification

Invitrogen™ Dynabeads™ products have, by far, more publications for use in IP than any other magnetic beads.

Automated IP protocols are now available using Dynabeads products with KingFisher systems.

Intrinsic features, perfectly suited for automation

High reproducibility is a trademark of Dynabeads products. All beads—both within and between batches—are identical in size, shape, surface properties, and iron content (Figure 4). The beads disperse well and sediment slowly, yet move quickly and with an even pull to the magnet.

These features facilitate rapid binding of target, short incubation time, and short separation time. The beads do not aggregate, helping to ensure homogenous fluid behavior in automated systems, and can be considered a pipettable solid phase that handles like a liquid. Magnetic beads enable effective IP of proteins using automated systems, with results comparable to manual protocols (Figures 5–8).

Highlights of Dynabeads products

- **Low background**—little to no nonspecific binding
- **Highly reproducible**—uniform beads help ensure the most consistent results
- **Highly sensitive**—Dynabeads technology is the most cited method for sensitive applications, such as ChIP and IP of low-abundance proteins
- **Fast**—less than 40-minute protocol
- **Easy**—no centrifugation or preclearing steps
- **Antibody savings**—all binding occurs on the smooth outer surface of the beads, which conserves precious antibodies and supports a cost-efficient solution per sample

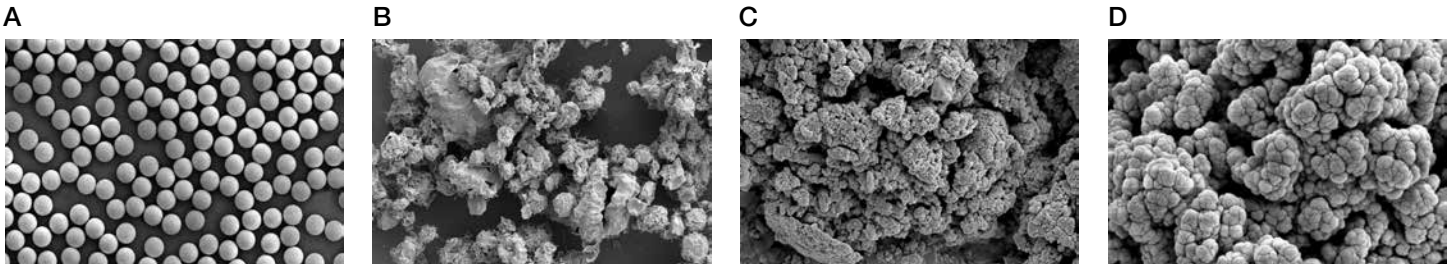


Figure 4. The magnetic bead you choose will affect your results. Dynabeads magnetic beads have a defined surface to carry out the necessary binding, with no inner surface to trap unwanted proteins. **(A)** Dynabeads products are the most uniform, monodisperse superparamagnetic beads, manufactured with highly controlled product qualities to help ensure the highest degree of reproducibility. **(B–D)** Magnetic particles from alternative suppliers have variable shapes and sizes that trap impurities, resulting in lower reproducibility and increased nonspecific binding.

"Finally we have found a way to reduce our total protocol time from 4 days to 1 day! Now we can analyze several hundreds of samples in our phase I clinical study in combination with mass spectrometry by using the KingFisher Flex and the new Dynabeads IP protocol."

Erik Portelius, **PhD**, Department of Neuroscience and Physiology, University of Gothenburg

"Protocols were tested in replicates and showed high reproducibility and robustness."

Dr. Tom Bretschneider,
Boehringer Ingelheim, GmbH

77% of those who publish using the KingFisher system for IP use Dynabeads technology.

77%

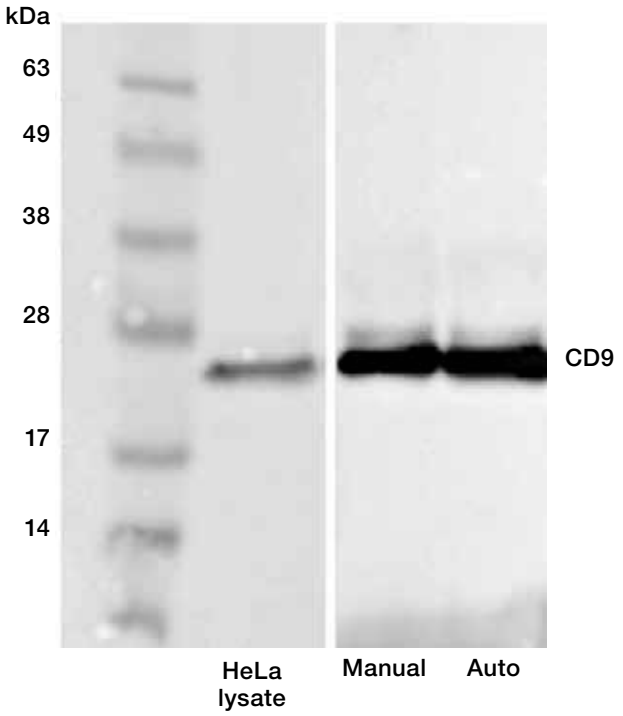


Figure 5. IP yield. IP from HeLa cell lysate with Invitrogen™ Dynabeads™ Protein G bound to anti-human CD9 antibody shows similar results using either a manual protocol or automated protocol on the KingFisher Flex system. CD9 protein was detected by western blot.

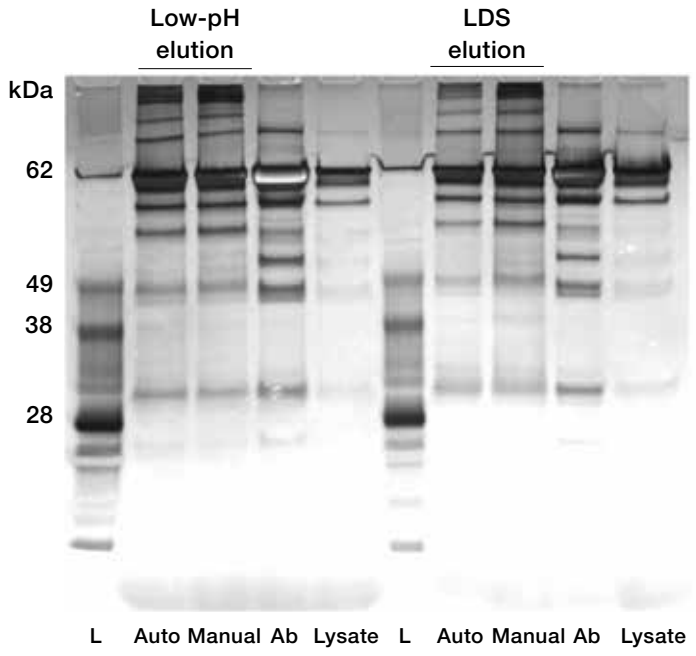


Figure 6. Detection of nonspecific binding. Automated and manual methods have equivalent nonspecific binding. IP was performed with Dynabeads Protein G bound to an irrelevant antibody using either a manual protocol or automated protocol on the KingFisher Flex system. Protein was eluted under mild (low pH) or denaturing (LDS) conditions and detected with silver staining after SDS-PAGE on the Invitrogen™ Bolt™ system.

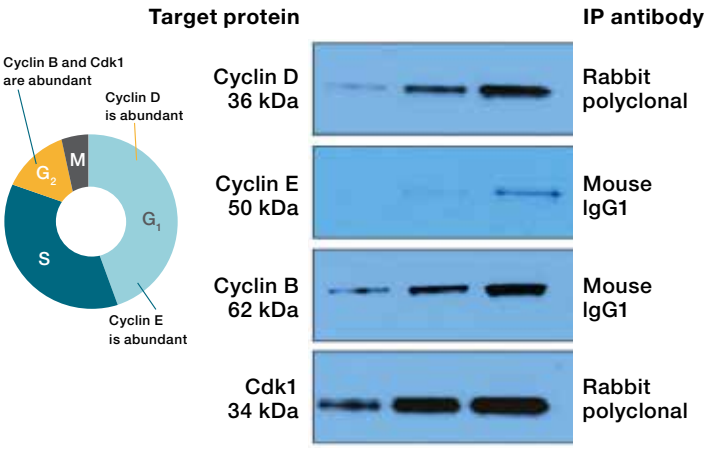


Figure 7. Effective IP of cell cycle proteins. U2OS cells were synchronized, grown to points in the cell cycle as shown, and then harvested. Lysed cells were incubated overnight at 4°C with antibody against cell cycle proteins. Each antigen-antibody complex was captured on 50 mL of Thermo Scientific™ Pierce™ Protein A/G Magnetic Beads using a KingFisher Flex system. Eluted sample volumes of 5 mL, 10 mL, and 20 mL were resolved by SDS-PAGE and analyzed by western blot.

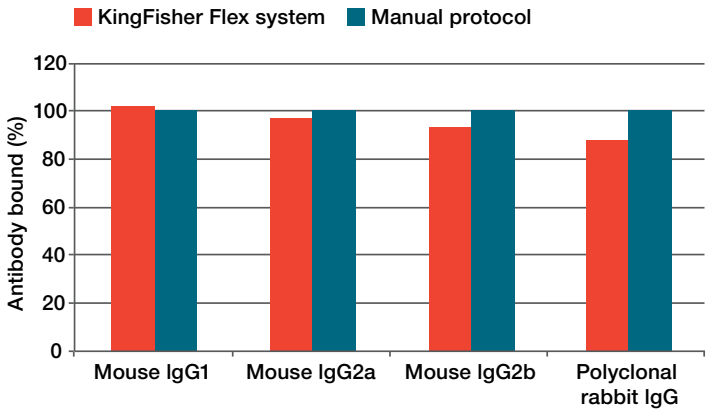


Figure 8. Comparable antibody binding efficiency of different subclasses measured using an immunoassay detection system. Antibodies were bound to Dynabeads Protein G for 10 minutes using either a manual protocol (blue) or automated protocol on the KingFisher Flex system (red).

Advantages of Dynabeads products for protein complex isolation

- Quick and easy pull down of intact, functional protein complexes (Figure 9)
- No time-consuming preparation steps
- Only isolate the proteins you want
- Can be adapted for high-throughput applications
- Increasing number of publications citing Dynabeads products for IP compared to other isolation products (Figure 10)

> "Dynabeads are absolutely the best technology we have found so far for pulling out large complexes."
>
> **Dr. Michael P. Rout**, Rockefeller University

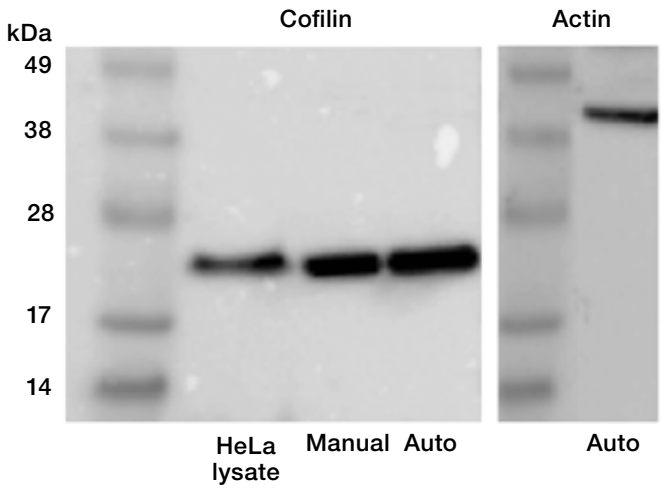


Figure 9. Co-IP from HeLa cell lysate with Invitrogen™ Dynabeads™ Sheep anti-Rabbit IgG bound to anti-cofilin antibody. The western blot shows that actin was successfully co-immunoprecipitated with its binding partner cofilin using an automated protocol on the KingFisher Flex system.

Product selection guide

Bead surface coating	Required ligand	Main benefits for IP	High-throughput compatible	Mass spec compatibility	Products
Protein A, protein G	Primary antibodies from most species; protein A and G bind different antibody species and subclasses with different specificities	• Dynabeads products have the fastest and easiest protocol • Low nonspecific binding • High reproducibility	KingFisher Flex and KingFisher Duo Prime systems	Medium*	• Dynabeads Protein A • Dynabeads Protein A IP kit • Dynabeads Protein G • Dynabeads Protein G IP kit • Pierce Protein A/G Magnetic Beads
Secondary antibodies	Mouse IgGs or rabbit IgGs	• Specific binding of mouse or rabbit IgGs • Low nonspecific binding	KingFisher Flex and KingFisher Duo Prime systems	High	• Dynabeads M-280 Sheep Anti-Mouse IgG • Dynabeads M-280 Sheep Anti-Rabbit IgG
Streptavidin	Any biotinylated antibody or ligand	• Binds any biotinylated protein • For samples high in soluble IgGs • For recombinant Ab lacking the Fc region	KingFisher Flex and KingFisher Duo Prime systems	High	• Dynabeads M-280 Streptavidin • Pierce Streptavidin Magnetic Beads

*Contains Tween™-20 detergent that can interfere with mass spectrometry.

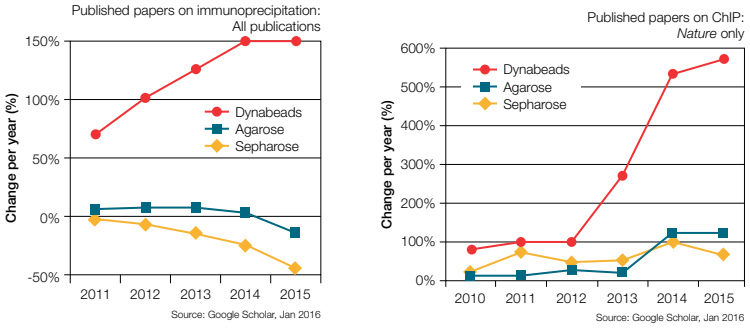


Figure 10. Immunoprecipitation publication trends.

Can I modify the protocol to fit my own needs?

The protocols are optimized for standard IP and can be used as is, but parameters can be changed depending on your needs, for example:

- Increase the incubation time of beads with sample from 10 min to 1 hr if you have a low-abundance protein or low-affinity antibody
- Increase elution volume from 30 µL to 100 µL to increase protein yield if you are not doing a western blot (Figure 11)
- Change from denaturing to mild elution conditions if functional protein is desired

Is 10 min binding to the Dynabeads magnetic beads sufficient for most antibodies and proteins?

When comparing antibody-binding efficiency in different time intervals, no significant difference was observed. Thus, a 10 min incubation time is sufficient (Figure 12).

Do I have to make any compromises in quality moving from my manual Dynabeads IP protocol to the automated protocol?

We have tested the automated protocol for standard IP (direct and indirect techniques) and co-IP for different parameters such as antibody binding capacity, target protein yield, nonspecific binding, and reproducibility. We observed no significant differences in the results obtained using the automated and manual protocols.

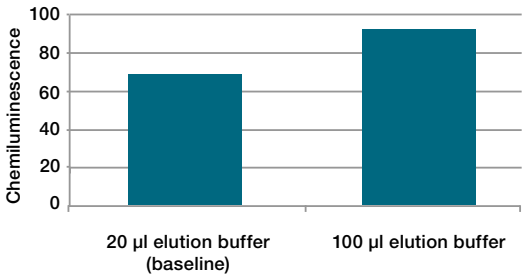


Figure 11. Increase in protein yield using 100 µL elution buffer.

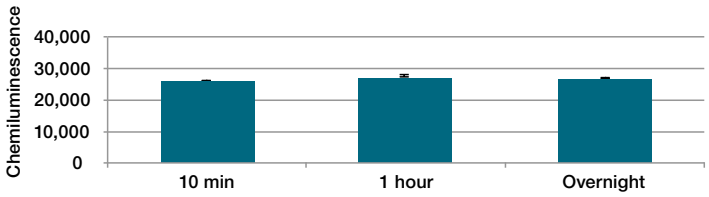


Figure 12. Different incubation times of Dynabeads Protein G with mouse IgG1 on the KingFisher Flex system.

What are the most critical parameters of the IP protocol?

The automated IP protocols are a good starting point for your IP or protein purification protocol, but you can adjust some parameters including volumes, incubation times, and elution conditions. Many parameters can be successfully changed, but some changes might decrease the output, so try to avoid changing the following parameters:

- Mixing condition after antibody binding
- Number of washing steps after antibody binding

4 common IP myths debunked

Check out our myth-busting video series at: **thermofisher.com/ipmyths**

Myth	Fact
Background can't be avoided.	Almost all background is removed using Dynabeads magnetic beads because all antibodies are accessible on the smooth bead surface, limiting nonspecific background.
Preclearing is necessary to get good IP results.	The preclearing step is unnecessary with Dynabeads magnetic beads. You can save time and you use half the amount of solid phase, which helps save money.
Higher capacity is better for IP.	The high capacity of Sepharose beads comes from high surface area, which may also trap a lot of unwanted protein, thereby wasting antibody. Even with lots of washing, you will end up with unwanted background. Good capacity with high yield is best.
Dynabeads magnetic beads are expensive.	With no preclearing and less antibody used, Dynabeads magnetic beads help save you money by balancing optimal capacity, yield, reproducibility, and purity.

For more information, go to **thermofisher.com/immunoprecipitation**
View additional IP videos at **youtube.com/immunoprecipitation**

- Immunoprecipitation myth videos
- Immunoprecipitation Publication Trends—The Reasons for the Shift
- Immunoprecipitation Interactive Selection Guide

Ordering information

Description	Cat. No.
Instruments	
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
Accessories for the KingFisher Flex system	
24 deep-well tip comb and plate	97002610
24 deep-well plate	95040480
96-tip comb for deep-well magnet (same as Cat. No. 4388487)	97002534
96-well microplate (same as Cat. No. 4388475)	97002540
96 deep-well plate (same as Cat. No. 4388476)	95040450
Accessories for the KingFisher Duo Prime system	
12-tip comb for 96 deep-well plate	97003500
6-tip combs and 24 deep-well plates	97003510
Elution strip	97003520
Combo pack for 96 deep-well plate (combs, plates, and elution strips for 96 samples)	97003530
Nucleic acid purification products	
MagMAX *mir*Vana Total RNA Isolation Kit	A27828
MagMAX DNA Multi-Sample Ultra Kit	A25597
MagMAX FFPE DNA/RNA Ultra Kit	A31881
MagMAX Total Nucleic Acid Isolation Kit	AM1840
MagMAX Cell-Free DNA Isolation Kit	A29319
MagMAX Pathogen RNA/DNA Kit	4462359
Dynabeads mRNA DIRECT Purification Kit	61011
Immunoprecipitation and protein purification products	
Dynabeads Protein A	10002D
Dynabeads Protein G	10004D
Pierce Protein A/G Magnetic Beads	88803
Dynabeads M-280 Sheep Anti-Mouse IgG	11202D
Dynabeads M-280 Sheep Anti-Rabbit IgG	11204D
Dynabeads M-280 Streptavidin	11206D
Pierce Streptavidin Magnetic Beads	88817

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