omega BIO-TEK
innovations in nucleic acid isolation

Product Manual

Mag-Bind® HMW DNA Kit

M6311-00	24 preps
M6311-01	96 preps

Manual Date: June 2026
Revision Number v1.3

For Research Use Only

Omega Bio-tek, Inc.
400 Pinnacle Way, Suite 450
Norcross, GA 30071
www.omegabiotek.com

770-931-8400
770-931-0230
info@omegabiotek.com

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Mag-Bind® HMW DNA Kit

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Intended Use/Intended User

Intended Use

For professional research use.

The Mag-Bind® HMW DNA Kit is intended for isolation and purification of high molecular weight DNA from whole blood, buffy coat, saliva, and cells.

The Mag-Bind® HMW DNA Kit utilizes magnetic bead-based technology and can be processed manually or automated on most open-ended liquid handling platforms as well as magnetic processors.

Intended User

The Mag-Bind® HMW DNA Kit is intended for professional use and to be used by or under the supervision of professional users, such as laboratory personnel, technicians, researchers, and physicians specifically instructed and trained in molecular biology techniques and familiar with magnetic bead-based purification, either manual or automated.

Product Description

The Mag-Bind® HMW DNA Kit is designed for the purification of high molecular weight DNA up to 450 kb, ideal for long-read sequencing technologies. The Kit follows magnetic bead-based technology to purify high molecular weight DNA from up to 250 µL whole blood and saliva, 300 µL buffy coat, and 5 x 10^6 cells. The Mag-Bind® HMW DNA Kit utilizes magnetic bead-based technology and can be processed either manually or automated on most open-ended liquid handling platforms as well as magnetic processors.

The optimized protocol uses innovative LNB Buffer combining the lysis-bind steps into a single step. Sample is added to LNB Buffer master mixed with Mag-Bind® Particles HDQ and Proteinase K Solution for a convenient, walkaway solution. The samples are gently lysed, and DNA binds to the surface of Mag-Bind® Particles HDQ. DNA-bound to Mag-Bind® Particles HDQ undergo several wash steps to eliminate contaminants and PCR inhibitors. The protocol steps are optimized to minimize fragmentation and high molecular weight DNA is eluted in Elution Buffer. Purified DNA is suitable for a variety of downstream applications including long-read sequencing on third-generation sequencing platforms such as Oxford Nanopore etc.

Important:

1. Follow the recommended protocol closely, paying particular attention to pipette-mixing or vortexing instructions. Any deviations from the protocol may cause mechanical shearing of DNA and result in lower fragment sizes.

2. If automating the procedure on a liquid handler or a magnetic processor, please contact your Omega Bio-tek representative for instrument specific instructions. It is the responsibility of the user to validate any automated method for any particular use.

3. This kit includes enough reagents for the specified number of preparations plus at least an additional 10% overage to ensure there is sufficient volume. Please be aware that the actual number of preparations may be lower due to pre-aliquoting of reagents, processing partial plates, and automation platform used, etc. Please visit the product page at www.omegabiotek.com for more details and ordering information.

Kit Contents and Storage

Kit Contents

Product No	M6311-00	M6311-01
Purifications	24	96
LNB Buffer	11 mL	55 mL
BL Buffer	30 mL	100 mL
VHB Buffer	22 mL	88 mL
Elution Buffer	5 mL	15 mL
Proteinase K Solution	600 µL	2.2 mL
Mag-Bind® Particles HDQ	600 µL	2.2 mL
User Manual	✓	✓

Storage and Stability

All of the Mag-Bind® HMW DNA Kit components are guaranteed for at least 12 months from the date of purchase when stored as follows. Proteinase K Solution can be stored at room temperature for up to 12 months. For long-term storage, store Proteinase K Solution at 2-8°C. Mag-Bind® Particles HDQ should be stored at 2-8°C. All remaining components should be stored at recommended temperatures as mentioned on the bottle label and away from bright light. During shipment or storage in cool ambient conditions, precipitates may form in some buffers. Dissolve such deposits by warming the solution at 37°C and gently shaking.

Preparing Reagents

1. Dilute LNB Buffer with 100% isopropanol as follows and store at room temperature.

Kit	100% Isopropanol to be Added
M6311-00	9 mL
M6311-01	45 mL

2. Dilute VHB Buffer with 100% ethanol as follows and store at room temperature.

Kit	100% Ethanol to be Added
M6311-00	28 mL
M6311-01	112 mL

3. Prepare enough stock of 70% ethanol and store at room temperature.

4. Shake or vortex the Mag-Bind® Particles HDQ to fully resuspend the particles before use. The particles must be fully suspended during use to ensure proper binding.

Warnings

This kit is for professional research use.

Please decontaminate and dispose of all potentially infectious materials in accordance with applicable local, state/provincial, and/or national regulations. For any assistance, please contact Omega Bio-tek at info@omegabiotek.com.

If you use this kit following an automated extraction workflow, the surface of the automated platform is considered a biohazard. Use appropriate decontamination and disposal methods in adherence to all applicable local state/provincial, and/or national regulations.

Safety and Handling Information

All chemicals and biological materials are potentially hazardous.

Biological samples such as plasma, serum, tissues, body fluids, blood, etc. are potentially infectious and must be treated as biohazardous materials. Use appropriate decontaminations and disposal methods in adherence to all applicable local state/provincial, and/or national regulations.

Please refer to safety data sheets (SDSs) for information on safe handling, transport and disposal of different reagents included in this kit. SDSs are made available in PDF format on the product page at www.omegabiotek.com. Discard all waste in accordance with the local safety regulations.

Where allowed, packaging for nonhazardous buffers, kit boxes, or other packaging materials may be recycled in accordance with local regulations. Reference product labelling or visit www.omegabiotek.com for more information.

Precautions

Some of the buffers included in the Mag-Bind® HMW DNA Kit contain guanidine-based chaotropic agents which can form highly reactive compounds when combined with bleach. DO NOT add bleach or acidic solutions to guanidine containing sample-preparation waste. Please access the SDSs online for detailed information on the reagents.

Component	Description
LNB Buffer 	Contains: Guanidine hydrochloride. Warning! Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. Do not eat, drink, or smoke when using this product. Wear protective gloves, protective clothing, eye protection, and face protection. Wash all exposed external body areas thoroughly after handling. SWALLOWED: Call a POISON CENTER/doctor/physician/ first aider/if you feel unwell. Rinse mouth. ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention. IN EYES: Rinse cautiously with water for serval minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
BL Buffer 	Contains: Guanidine hydrochloride. Warning! Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. Do not eat, drink, or smoke when using this product. Wear protective gloves, protective clothing, eye protection, and face protection. Avoid breathing mist/vapors/spray. Wash all exposed external body areas thoroughly after handling. Use in a well-ventilated area. SWALLOWED: Rinse mouth. Call a POISON CENTER/doctor/physician/ first aider/if you feel unwell. ON SKIN: Wash with plenty of water and soap. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IN EYES: Rinse cautiously with water for serval minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. INHALED: Remove person to fresh air and keep comfortable for breathing.

Component	Description
VHB Buffer 	Contains: Guanidine hydrochloride. Warning! Causes serious eye irritation. Causes skin irritation. May cause an allergic skin reaction. Harmful if swallowed. Avoid breathing mist/vapors/spray. Do not eat, drink, or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. If exposed or concerned: call a poison center or doctor/physician. IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. ON SKIN: Wash with plenty of water and soap. Take off contaminated clothing and wash before reuse. If skin irritation persists: Get medical advice/attention. SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.
Proteinase K Solution 	Contains: Proteinase K. Danger! Causes mild skin irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Avoid breathing dust/fume/gas/mist/spray. Wear protective gloves/ protective clothing/eye protection/fact protection. Wear respirator protection. If exposed or concerned: Call a poison center or doctor/physician. Remove person to fresh air and keep at rest in a position comfortable for breathing.

Protocol for Blood and Saliva

Important: Follow the recommended protocol closely, paying particular attention to pipette-mixing or vortexing instructions. Any deviations from the protocol may cause mechanical shearing of DNA and result in lower fragment sizes.

If automating the procedure on a liquid handler or a magnetic processor, please contact your Omega Bio-tek representative for instrument-specific instructions. It is the responsibility of the user to validate any automated method for any particular use.

Materials and Equipment to be provided by user:

- Magnetic separation device compatible with 1.5/2.0 mL microcentrifuge tube
- Orbital shaker compatible with 1.5/2.0 mL microcentrifuge tube
- Vortexer
- 1.5/2.0 mL microcentrifuge tube compatible with the magnetic separation device
- 100% ethanol
- 70% ethanol
- 100% isopropanol

Before Starting:

- Prepare LNB Buffer and VHB Buffer according to the "Preparing Reagents" section on Page 5.
- Prepare enough 70% ethanol needed for wash steps.

1. Add 250 µL blood or saliva to a 1.5 mL microcentrifuge tube (not provided).

2. Create a lysis and bind mix according to the table below.

Component	Amount per Prep	12 Preps	24 Preps
LNB Buffer	690 µL	9.11 mL*	18.22 mL*
Proteinase K Solution	20 µL	264 µL*	528 µL*
Mag-Bind® Particles HDQ	20 µL	264 µL*	528 µL*

*10% excess volume has been calculated for samples.

Note: LNB Buffer must be diluted with 100% isopropanol prior to use. Please see Page 5 for instructions.

Important: Only prepare as much LNB Buffer/Proteinase K Solution/Mag-Bind® Particles HDQ master mix that will be used within 4 hours of preparation.

3. Add 730 µL LNB Buffer/Proteinase K Solution/Mag-Bind® Particles HDQ master mix to the sample. Invert the tube 10 times to mix gently. Let sit at room temperature for 10 minutes.

Important: Do NOT vortex the tube as this will cause mechanical shearing of DNA and result in lower fragment sizes.

4. After the 10-minute incubation, vortex the sample at max speed for 10 minutes to mix.

5. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are cleared from solution.

6. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

7. Remove the tube from the magnetic separation device.

8. Add 900 µL BL Buffer.

9. Vortex for 20 seconds to mix.

   Note: If using a vortex with setting 1-10, use setting 4 for gentle mixing to reduce the chances of foam occurring during this step.

10. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are cleared from solution.

11. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

12. Remove the tube from the magnetic separation device.

13. Add 900 µL VHB Buffer.

    Note: VHB Buffer must be diluted with 100% ethanol prior to use. Please see Page 5 for instructions.

14. Vortex for 20 seconds to mix.

15. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are cleared from solution.

16. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

17. Remove the tube from the magnetic separation device.

18. Repeat Steps 13-17 for a second VHB Buffer step.

19. Add 900 µL 70% ethanol (not provided).

20. Vortex for 20 seconds.

21. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are cleared from solution.

22. Aspirate and discard the cleared supernatant.

23. Leave the tube on the magnetic separation device. Wait 1 minute. Remove residual liquid with a pipettor. Dry the Mag-Bind® Particles HDQ for an additional 10 minutes.

24. Remove the tube from the magnetic separation device.

25. Add 100 – 200 µL Elution Buffer. Tip mix 10 times.

    Note: Visually inspect the sample to be sure the Mag-Bind® Particles HDQ are completely resuspended in the Elution Buffer. If not, add additional tip mixing until complete resuspension occurs.

26. Shake the tube at 1500 RPM for 20 minutes at room temperature.

Important: Order of operation is critical to prevent the Mag-Bind® Particles HDQ from clumping. Once Elution Buffer is added, first tip mix sample 10 times then shake for 20 minutes.

27. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are cleared from solution.

28. Transfer the cleared supernatant containing purified DNA to a new 1.5 mL microcentrifuge tube.

29. Store DNA at -20°C.

Protocol for Buffy Coat

Important: Follow the recommended protocol closely, paying particular attention to pipette-mixing or vortexing instructions. Any deviations from the protocol may cause mechanical shearing of DNA and result in lower fragment sizes.

If automating the procedure on a liquid handler or a magnetic processor, please contact your Omega Bio-tek representative for instrument-specific instructions. It is the responsibility of the user to validate any automated method for any particular use.

Materials and Equipment to be provided by user:

- Magnetic separation device compatible with 1.5/2.0 mL microcentrifuge tube
- Orbital shaker compatible with 1.5/2.0 mL microcentrifuge tube
- Vortexer
- 1.5/2.0 mL microcentrifuge tube compatible with the magnetic separation device
- 100% ethanol
- 70% ethanol
- 100% isopropanol
- Optional: 1X PBS

Before Starting:

- Prepare LNB Buffer and VHB Buffer according to the "Preparing Reagents" section on Page 5.
- Prepare enough 70% ethanol needed for wash steps.

1. Add up to 300 µL buffy coat to a 1.5 mL microcentrifuge tube (not provided).

   Note: We recommend starting with 100 µL and bringing the volume up to 300 µL with PBS (not provided) or Elution Buffer.

2. Proceed to Step 2 of the Blood and Saliva Protocol on Page 10 to continue with purification of DNA from buffy coat.

Protocol for Cells

Important: Follow the recommended protocol closely, paying particular attention to pipette-mixing or vortexing instructions. Any deviations from the protocol may cause mechanical shearing of DNA and result in lower fragment sizes.

If automating the procedure on a liquid handler or a magnetic processor, please contact your Omega Bio-tek representative for instrument-specific instructions. It is the responsibility of the user to validate any automated method for any particular use.

Materials and Equipment to be provided by user:

- Magnetic separation device compatible with 1.5/2.0 mL microcentrifuge tube
- Orbital shaker compatible with 1.5/2.0 mL microcentrifuge tube
- Vortexer
- 1.5/2.0 mL microcentrifuge tube compatible with the magnetic separation device
- 100% ethanol
- 70% ethanol
- 100% isopropanol
- 1X PBS

Before Starting:

- Prepare LNB Buffer and VHB Buffer according to the "Preparing Reagents" section on Page 5.
- Prepare enough 70% ethanol needed for wash steps.

1. Collect cells as a cell pellet prior to lysis. Each cell pellet can contain up to 5 x 10^6 cells. For frozen cell pellets, thaw the cell pellet and immediately proceed to the next step.

2. Resuspend cell pellet in 250 µL 1X PBS (not provided).

3. Proceed to Step 2 of the Blood and Saliva Protocol on Page 10 to continue with purification of DNA from cells.

Troubleshooting Guide

Please use this guide to solve any problems that may arise. We hope that it will aid in clearing up any questions for you. If you need further assistance, please contact our technical support staff at our Toll-Free Number, 1-800-832-8896.

Possible Problems and Suggestions

Problem	Cause	Solution
Low DNA yield	Uneven distribution of Mag-Bind® Particles HDQ in master mix.	Keep Particles in suspension during distribution of master mix to each sample. Tip mix or vortex master mix after every 3-4 dispenses.
	Loss of Mag-Bind® Particles HDQ	Leave the sample on the magnet longer until all Mag-Bind® Particles HDQ have cleared from the solution before transferring or discarding supernatant.
	Mag-Bind® Particles HDQ clumping	• Follow elution protocol Steps 25-26 on Page 12 exactly as written, e.g. tip mixing followed by shaking. This is critical for efficient elution of DNA from the particles. • Recommend to use 1000-1250 µL pipet tips for optimal Particles resuspension.
	No isopropanol added to LNB Buffer	Follow instructions carefully on Page 5 when preparing LNB Buffer.
	No ethanol added in VHB Buffer	Follow instructions carefully on Page 5 when preparing VHB Buffer.
	Inefficient cell lysis due to inefficient mixing of LNB Buffer/Proteinase K Solution master mix and sample	Make sure the sample is thoroughly mixed with LNB Buffer/Proteinase K Solution master mix within 4 hours of master mix preparation.

Troubleshooting Guide

Problem	Cause	Solution
DNA shearing	Vortex at lysis step	Do not vortex at Step 3 immediately after addition of LNB Buffer/Proteinase K Solution/Mag-Bind® Particles HDQ master mix. Incubation at room temperature for 10 minutes is required before vortexing to prevent DNA shearing.
	Vortex at elution step	Once Mag-Bind® Particles HDQ are resuspended in Elution Buffer, use a shaker to gently mix the solution to reduce shearing DNA.
Low $A_{260/230}$	Cloudy eluate	Increase vortex time for Step 9 to 1 minute.
	Ethanol carryover	Remove residual liquid during Step 23.
	Incomplete washing	Increase vortex time of washes to 30-60 seconds.

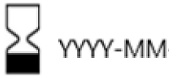
Contact Information

To reorder supplies, report a device failure, or complaint, please contact:

	**Manufacturer** Omega Bio-tek, Inc. 400 Pinnacle Way Suite 450 Norcross, GA 30071 Website: www.omegabiotek.com Email: info@omegabiotek.com SRN: US-MF-000024148

Symbols

The following symbols may appear in the instructions for use or on the packaging and labeling:

Picture	Description
	Use-by date
	Check components for storage conditions
	Lot number
	Manufacturer
	No additional hazards or not classified as hazardous according to GHS. Also see hazardous symbols as defined in the Precautions Section
	Recycling Information visit www.omegabiotek.com/company/recycling

Symbols

Picture	Description
	Website
	Telephone
	Fax
	Email
	LinkedIn
	X
	Facebook

Document Revision History

Revision	Description
June 2026, v1.3	Fixed the sample information for the Cells Protocol.
June 2026, v1.2	Updated the kit size identification on the cover.
June 2026, v1.1	Fixed formatting issue.
May 2026, v1.0	Initial release.

Notices and Disclaimers

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Qiagen®, QIAvac®, and Vacman® are all trademarks of their respective companies.
PCR is a patented process of Hoffman-La Roche. Use of the PCR process requires a license.

Notes

Notes

Notes

For more purification solutions, visit www.omegabiotek.com

AVAILABLE FORMATS


Spin Columns

96-Well Silica Plates


Mag Beads

SAMPLE TYPES


Blood / Plasma

Plasmid


Cultured Cells


Plant & Soil


NGS Clean Up


Tissue


FFPE


Fecal Matter

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400 Pinnacle Way, Suite 450
Norcross, GA 30071
www.omegabiotek.com

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