



## Mag-Bind® Blood DNA HV Kit

M3292-00	1 x 24 preps
M3292-01	4 x 24 preps

**Manual Date: May 2024**  
**Revision Number: v4.0**

**For Research Use Only**



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# Mag-Bind® Blood DNA HV Kit

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# Intended Use

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For professional research use.

The Mag-Bind® Blood DNA HV Kit is intended for isolation and purification of genomic DNA from up to 4 mL whole blood samples.

The Mag-Bind® Blood DNA HV 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 Mag-Bind® Blood DNA HV Kit can be used to process up to 2 mL whole blood samples on Omega Bio-tek's MagBinder® Fit<sup>24</sup> Nucleic Acid Purification System when user-filled into MagBinder compatible cartridges.

## Intended User

The Mag-Bind® Blood DNA HV Kit is 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.

### New in this Edition:

April 2024:

- RMP Buffer has been replaced with KWB Buffer.
- This kit has been updated with a new 4 mL whole blood protocol. The previous whole blood protocols have been removed.

February 2019:

- Omega Bio-tek's logo has changed. There is no change to the contents or procedure.

# Product Description

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The Mag-Bind® Blood DNA HV Kit is designed for rapid and reliable isolation of high-quality genomic DNA from up to 4 mL whole blood samples. The Mag-Bind® Blood DNA HV Kit has been optimized for up to 2 mL whole blood samples on Omega Bio-tek's MagBinder® Fit<sup>24</sup> Nucleic Acid Purification System when user-filled into MagBinder compatible cartridges. Mag-Bind® Particles CH provide a quick magnetic response time reducing overall processing time. This system combines the reversible nucleic acid-binding properties of Mag-Bind® paramagnetic particles with the time-proven efficiency of Omega Bio-tek's DNA isolation system to provide a fast and convenient method to isolate DNA. Utilizing paramagnetic particles provides high-quality DNA that is suitable for direct use in most downstream applications, such as amplification and enzymatic reactions.

If using the Mag-Bind® Blood DNA HV Kit for the first time, please read this manual in its entirety to become familiar with the procedures. Samples are lysed in a buffer system tailored for large volume blood samples. DNA is isolated from the lysates by binding to the surface of the paramagnetic particles. The paramagnetic particles are separated from the lysates by using a magnetic separation device. After a few rapid wash steps to remove trace contaminants, DNA is eluted in Elution Buffer.

## Important:

1. If automating this 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(s) for any particular use.
2. Kits include enough reagents for the specified number of preparations plus 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.

# Kit Contents

Product	M3292-00	M3292-01
Purifications	1 x 24	4 x 24
AL Buffer	125 mL	360 mL
HDQ Binding Buffer	40 mL	200 mL
KWB Buffer	6 x 30 mL	3 x 250 mL
Elution Buffer	30 mL	250 mL
Mag-Bind® Particles CH	10 mL	30 mL
Proteinase K Solution	9 mL	4 x 9 mL
User Manual	✓	✓

## Storage and Stability

All of the Mag-Bind® Blood DNA HV 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 CH should be stored at 2-8°C for long-term use. Store all other components at recommended temperatures as mentioned on the bottle label and away from bright light. Once product is opened, continue to maintain the product in accordance with labeled instructions. Ensure that caps are properly tightened following each use. 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 HDQ Binding Buffer as follows and store at room temperature.

Kit	100% Isopropanol to be Added
M3292-00	160 mL
M3292-01	800 mL

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

Kit	Total Amount of 70% Ethanol Required
M3292-00	100 mL
M3292-01	400 mL

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

# Warnings

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Please read all instructions carefully before using the kit.

Please decontaminate and dispose all potentially infectious materials in accordance with applicable local, state, and European regulations. For customers in the European Union, please be aware that you are required to report serious incidents that have occurred in relation to the device to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established. For any assistance, please contact Omega Bio-tek at [info@omegabiotek.com](mailto: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 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. Conduct all work in properly equipped facilities following universal precautions and using appropriate personal safety equipment such as disposable gloves, lab coats, safety glasses, etc. as required by policies and procedures outlined by your facility.

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](http://www.omegabiotek.com). Discard all waste in accordance with the local safety regulations.










# Precautions

Some of the buffers included in the Mag-Bind® Blood DNA HV 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
AL Buffer	Contains: Guanidine hydrochloride. Warning! Causes serious eye irritation. Causes skin irritation. Harmful if swallowed. Do not eat, drink or smoke when using this product. Wash all exposed external body areas thoroughly after handling. Wear protective gloves, protective clothing, eye protection, and face protection. IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if eye irritation persists. Take off contaminated clothing and wash before reuse. ON SKIN: Wash with plenty of water and soap. Get medical advice/attention if skin irritation or rash occurs. 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/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. If exposed or concerned: Call a poison center or doctor/physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing.



# Precautions

Component	Description
HDQ Binding Buffer	<p>Contains: Sodium perchlorate. Danger! May cause damage to organs through prolonged or repeated exposure. May cause fire or explosion; strong oxidizer. Harmful if swallowed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Do not breathe mist/vapors/spray. Wash all exposed external body areas thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear protective gloves and protective clothing. SWALLOWED: Rinse mouth. Call a POISON CENTER/doctor/physician/first aider if you feel unwell. ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Get medical advice/attention if you feel unwell. In case of fire: Use ... to extinguish. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.</p>
	  
KWB Buffer	<p>Contains: Guanidine hydrochloride, sodium perchlorate, and ethanol. Danger! Flammable liquid and vapor. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause fire or explosion; strong oxidizer. May cause damage to organs through prolonged or repeated exposure (Oral, Dermal). Do not eat, drink or smoke when using this product. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Take any precaution to avoid mixing with combustibles/organic material. Keep container tightly closed. Do not breathe mist/vapors/spray. Wear protective gloves, protective clothing, eye protection and face protection. Wash all exposed external body areas thoroughly after handling. In case of fire: Use water spray/fog to extinguish. In case of major fire and large quantities: Evacuate area. Fight the fire remotely due to the risk of explosion. IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if irritation persists. SWALLOWED: Rinse mouth. Call a POISON CENTER/doctor/physician/first aider if you feel unwell. ON SKIN (or hair): wash with plenty of water. Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical advice/attention if irritation persists. ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Take off contaminated clothing and wash it before reuse.</p>
	   

# Mag-Bind® Blood DNA HV Kit

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## Protocol for 4 mL Whole Blood

The procedure below has been optimized for use with 4 mL FRESH or FROZEN whole blood samples.

**Important:** If automating this procedure on a liquid handler or a magnetic processor, please contact your Omega Bio-tek representative for instrument-specific instructions. Is it the responsibility of the user to validate any automated method(s) for any particular use.

### Materials and Equipment to be Supplied by User:

- Magnetic separation device for 2 mL and 15 mL tubes
- Heat block, incubator, or water bath capable of 70°C
- Vortexer
- 15 mL centrifuge tube compatible with the magnetic separation device
- 2 mL microcentrifuge tubes compatible with magnetic separation device
- 100% ethanol
- 70% ethanol
- 100% isopropanol
- Nuclease-free water
- Optional: RNase A (25 mg/mL)
- Optional: PBS

### Before Starting:

- Prepare HDQ Binding Buffer and 70% ethanol according to the "Preparing Reagents" section on Page 5.
- Set heat block, incubator, or water bath to 70°C.
- Heat Elution Buffer to 70°C.

1. Add a 4 mL blood sample to a 15 mL centrifuge tube (not provided). Bring the volume up to 4 mL with PBS (not provided) if volume of blood is less than 4 mL.

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2. Prepare a mastermix of AL Buffer and Proteinase K Solution only for the samples to be extracted according to the table below:

Component	Amount Per Purification	Total Amount Per 24-well plate
AL Buffer	3.4 mL	89.7 mL*
Proteinase K Solution	320 µL	8.4 mL*

\*10% excess volume has been calculated for a 24-well plate.

3. Add 3.72 mL AL Buffer/Proteinase K Solution mastermix to each sample. Vortex for 1 minute or pipet up and down 20 times to mix. Proper mixing is crucial for good yield.

**Note:** For automated protocols, tip mixing yields best results and is recommended.

4. Incubate at 70°C for 25 minutes.

**Optional:** Add 100 µL RNase A (25 mg/mL) to each sample. Vortex or pipet up and down 20 times to mix. For automated protocols, tip mixing yields best results and is recommended.

5. Add 5.4 mL HDQ Binding Buffer and 240 µL Mag-Bind® Particles CH. Vortex for 20 minutes to mix.

**Note:**

- HDQ Binding Buffer must be diluted with 100% isopropanol prior to use. Please see Page 5 for instructions.
- HDQ Binding Buffer and Mag-Bind® Particles CH can be prepared as a mastermix. Mix only what is needed for immediate processing.
- If constant vortexing for 20 minutes is not possible, vortex for 30 seconds every 2-3 minutes for 20 minutes.

6. Place the tube on a magnetic separation device to magnetize the Mag-Bind® Particles CH. Let sit at room temperature for 2 minutes until the Mag-Bind® Particles CH are completely cleared from solution.

**Note:** Time may be increased or decreased depending on the strength of the magnet used.

7. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles CH.

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8. Remove the tube from the magnetic separation device.
9. Add 2 mL KWB Buffer.
10. Vortex for 1 minute.  
  
**Note:** Complete resuspension of the Mag-Bind® Particles CH is critical for obtaining good purity.
11. Place the tube on the magnetic separation device to magnetize the Mag-Bind® Particles CH. Let sit at room temperature until the Mag-Bind® Particles CH are completely cleared from solution.
12. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles CH.
13. Remove the tube from the magnetic separation device.
14. Repeat Steps 9 -13 for a second KWB Buffer step.
15. Repeat Steps 9 -13 for a third KWB Buffer step.
16. Add 2 mL 70% ethanol (not provided).
17. Vortex for 1 minute or pipet up and down 20 times to mix.
18. Place the tube on the magnetic separation device to magnetize the Mag-Bind® Particles CH. Let sit at room temperature until the Mag-Bind® Particles CH are completely cleared from solution.
19. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles CH.
20. Remove the tube from the magnetic separation device.
21. Add 2 mL 70% ethanol.

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22. Vortex for 1 minute or pipet up and down 20 times to mix.
23. Transfer all of the DNA-bound Mag-Bind® Particles CH along with 70% ethanol they are suspended in to a new 2 mL microcentrifuge tube (not provided).

**Note:** This tube transfer step mitigates the loss of beads during the subsequent water wash step.
24. Place the tube on the magnetic separation device to magnetize the Mag-Bind® Particles CH. Let sit at room temperature until the Mag-Bind® Particles CH are completely cleared from solution.
25. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles CH.
26. Leave the tube on the magnetic separation device. Add 1 mL nuclease-free water (not provided) and immediately aspirate. Do not leave the nuclease-free water on Mag-Bind® Particles CH for more than 60 seconds.
27. Remove the tube from the magnetic separation device.
28. Add 400 – 1000 µL Elution Buffer preheated to 70°C to elute DNA from the Mag-Bind® Particles CH.

**Note:** Heat Elution Buffer to 70°C to improve yield.
29. Vortex for 5 minutes to mix.

**Note:** If constant vortexing for 5 minutes is not possible, vortex for 15 seconds every 1-2 minutes for 5 minutes.
30. Place the tube on the magnetic separation device to magnetize the Mag-Bind® Particles CH. Let sit at room temperature until the Mag-Bind® Particles CH are completely cleared from solution.
31. Transfer the cleared supernatant containing purified DNA to a new microcentrifuge tube. Store DNA at -20°C.

# Troubleshooting Guide

Please use this guide to troubleshoot any problems that may arise. For further assistance, please contact the technical support staff, toll free, at **1-800-832-8896**.

Problem	Cause	Solution
Low DNA yield	Incomplete resuspension of Mag-Bind® Particles CH	Resuspend the Mag-Bind® Particles CH by vortexing vigorously before use.
	Frozen blood samples not mixed properly after thawing	Thaw the frozen blood at room temperature and mix the blood by gently inverting the tube.
	Inefficient cell lysis due to inefficient mixing of AL Buffer, Proteinase K Solution, and sample	Make sure the sample is thoroughly mixed with AL Buffer and Proteinase K Solution. Extend incubation by 10 minutes.
	Loss of Mag-Bind® Particles CH during operation	Avoid disturbing the Mag-Bind® Particles CH during aspiration.
	DNA remains bound to Mag-Bind® Particles CH	Increase elution volume and incubation time to 15 minutes. Pipet up and down 50 to 100 times.
Problem	Cause	Solution
Mag-Bind® Particles CH do not completely clear from solution	Magnetization time too short	Increase collection time on the magnet.
Problem	Cause	Solution
Gel-like material in the eluted DNA	Blood is too old	Remove the gel-like material by centrifugation. Recommend using fresh blood.
		Use 8 mM NaOH in place of Elution Buffer.
Problem	Cause	Solution
Problems in downstream applications	Salt carryover	KWB Buffer and 70% ethanol must be at room temperature.
	Ethanol carryover	Dry the Mag-Bind® Particles CH before elution.

# Notices & Disclaimers

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For European Union Use.

AL Buffer contains Triton X-100, 2-[4-(2,4,4-trimethylpentan-2-yl)phenoxy]ethanol (CAS 9002-93-1), a substance included in the European Authorisation list (Annex XIV) of REACH Regulation (EC) No 1907/2006. Substances and mixtures used for the purpose of Scientific Research and Development (SR&D) are exempt from authorization requirements if used below 1 tonne per year in volume.

Scientific Research and Development includes experimental research or analytical activities at a laboratory scale such as synthesis and testing of applications of chemicals, release tests, etc. as well as the use of the substance in monitoring and routine quality control or in vitro diagnostics.



**Notes:**

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**Notes:**



For more purification solutions, visit [www.omegabiotek.com](http://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



BIO-TEK

innovations in nucleic acid isolation

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