



# **Fresh Bone Marrow Aspirate Collection, Storage, and Shipping Instructions**

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## Revision History

REVISION	NOTES
A	Initial release.

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## Introduction

This document is intended to give guidance as to the preferred methods for collecting, storing, packaging, and shipping **fresh bone marrow aspirates (BMA)** to preserve DNA quality for Bionano Optical Genome Mapping (OGM). It is strongly recommended to handle fresh BMA samples at room temperature throughout the process. Fresh BMA in Na Heparin can tolerate 37°C for 24 hours or 45°C for 6 hours during storage and shipping. Fresh BMA samples must be processed within 72 hours of collection. Following the instructions ensures best OGM performance.

## Materials and Equipment

The following materials are used to collect and store fresh bone marrow aspirates for OGM (**Table 1**):

**Table 1.** Collection and Storage Materials

Item	Description
Bone Marrow Aspirates	≥ 500 µl
Collection tube/vessel	Varies depending on amount of fresh BMA collected. However, fresh BMA should be collected in a tube/vessel which has minimal dead space and can maintain a good seal (i.e., collection vessel lid is threaded and can be capped tight, ex: VWR Low Temperature Freezer Vials, Self-Standing – 10ml, Catalog# 10018-740)
Na Heparin	Na Heparin final concentration 80U/ml
EDTA	EDTA final concentration 1.8 mg/ml
Bionano DNA Stabilizer	Bionano Genomics Part # 20397 or 20398
Tilting rocker (Vari-Mix Test Tube Rocker)	Fisher Scientific, Model#M48725Q, Catalog#12-815-3Q
1.5ml microfuge tubes, Nuclease Free	Fisher Scientific, Catalog#05-408-129
Disinfecting spray or wipes	10% bleach or equivalent

The following materials are used for shipping fresh bone marrow aspirates (**Table 2**):

**Table 2.** Shipping Materials.

Item	Description
Polystyrene box	At least 1.5 inches thick (2 inches preferred for international shipping)
Hard Sided Shipping Container	ex: Cardboard box that Polystyrene box fits into
Sealable Biohazard Plastic bag	General Supplier
Parafilm M	Fisher Scientific, Cat# 13-374-12

Item	Description
Soft packing material	ex: packing peanuts or bubble wrap
Absorbent material	Paper towels, Kimwipes, etc.
Customs/Shipping documents	May vary according to country of origin

## Collecting and Storing Fresh Bone Marrow Aspirates

Please follow these instructions when collecting fresh BMA.

1. Draw bone marrow into an EDTA or Na heparin to the final concentration as defined in Table 1.
2. Ensure that the fresh BMA is collected in a collection tube/vessel that has minimal dead space.
3. Invert the collection tube/vessel at least 5 times to fully incorporate the anticoagulant with the BMA, then keep at room temperature (RT) until aliquots are created.
4. Aliquot fresh BMA as soon as possible after draw following the instructions below:
  - a. Mix fresh BMA thoroughly by placing the tube on a continuously mixing tilting rocker for 10 minutes.
  - b. For each 500 µl volume of fresh BMA (drawn into Na Heparin) in the collection tube/vessel, add 7.5 µl of DNA Stabilizer (Bionano Genomics, part # 20397 or 20398) into the fresh BMA (ex: add 30 ul DNA Stabilizer for 2 mL of BMA volume).
 

**Note:** If volume markings are not present on the draw tube, fresh BMA volume can be measured using a pipette.

**Note:** DO NOT add DNA Stabilizer to fresh BMA drawn into EDTA tube(s).
  - c. Transfer 500 µl of fresh BMA (drawn into EDTA or heparin) into a 1.5 ml microfuge tube. Repeat until desired number of aliquots are created, or entire volume of BMA is transferred.
 

**Note:** Although only one aliquot is required for UHMW DNA extraction, it is recommended to keep a second aliquot as a backup.
  - d. Decontaminate surface of microfuge tubes using disinfecting wipes. Ensure that sample identifiers are still legible after decontamination.
  - e. Store samples at RT and avoid direct sunlight.

## Packaging and Shipping Instructions

Packaging materials must be leak-proof and meet the general requirements of UN3373 Category B Biological Substances as described by the [US Postal Service Packing Instruction 6F](#) (346.321) and [International Air Transportation Association Packing Instruction 650](#). Requirements of other carriers and customs authorities may apply.

1. Prepare a polystyrene box which is filled halfway with packing peanuts and/or bubble wrap.
2. Label collection tube(s) or vessel(s) and sealable plastic Biohazard bag.
3. Ensure lids from each collection tube/vessel are sealed tight, inspect each collection tube/vessel for leakage and wrap lid(s) with Parafilm.
4. Place collection tube(s)/vessel(s) in sealable plastic Biohazard bag, along with enough absorbent material (ex: paper towels, Kimwipes, etc.) to absorb any liquids that may leak from the samples.
5. Place bag in polystyrene box which is filled halfway with packing peanuts or bubble wrap.
6. Fill polystyrene box to top with packing peanuts or bubble wrap, ensuring there is enough material inside to cushion samples.
7. Place the polystyrene box inside a final cardboard box. The polystyrene box should not be able to move inside the outer cardboard box. If necessary, add cushioning material to fill excess space.
8. Apply Category B Biological Substances UN3373 Diamond and add the mark "Biological Substance Category B, UN3373" to exterior of the box, along with the name and phone number of a responsible person.
9. Print a shipping form containing sample information. Place form in a sealed plastic bag and include inside the shipment container (affix to outside lid of polystyrene box).
10. Ensure that the polystyrene box and outer cardboard box are secured shut.
11. For US domestic shipments, consider sending the package by next-day delivery service (ex: FedEx Priority Overnight or UPS Next Day Air). For International shipping recommendation to choose priority service.

**NOTE:** Fresh BMA in Na Heparin can tolerate 37°C for 24 hours or 45°C for 6 hours during storage and shipping.

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## Technical Assistance

For technical assistance, contact Bionano Technical Support.

You can retrieve documentation on Bionano products, SDS's, certificates of analysis, frequently asked questions, and other related documents from the Support website or by request through e-mail and telephone.

TYPE	CONTACT
<b>Email</b>	<a href="mailto:support@bionano.com">support@bionano.com</a>
<b>Phone</b>	Hours of Operation: Monday through Friday, 9:00 a.m. to 5:00 p.m., PST US: +1 (858) 888-7663  Monday through Friday, 9:00 a.m. to 5:00 p.m., CET UK: +44 115 654 8660 France: +33 5 37 10 00 77 Belgium: +32 10 39 71 00
<b>Website</b>	<a href="http://www.bionano.com/support">www.bionano.com/support</a>
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