

**BI**  
Biological Industries  
*Culture of Excellence*



# HUMAN CYTOGENETICS

## Biological Industries

With over 35 years of expertise in cell culture media development and manufacturing, Biological Industries' (BI) products including BIO-AMF™, BIO-HEMATO™, and BIO-PB™ brands—are used in cytogenetic laboratories all around the world.

Our cytogenetic product line gives you the option of selecting high quality tools that can help you make critical decisions in the lab. When your cytogenetics analysis is supported by the BI-team and BI media and supplements, you can be confident in the conclusions you reach.

Today, our product and services portfolio benefits both life science and medical customers. Whether it is in developing culture media for cell therapy, media to assist IVF procedures, or supplying media and reagents for classical cell culture, we are committed to providing our customers with a Culture of Excellence. We do this through our advanced GMP manufacturing and quality control systems, superior regulatory expertise, in-depth market knowledge, and extensive technical customer support, training, and R&D capabilities.



# BOOST PERFORMANCE INCREASE CONSISTENCY

### Performance

- Consistent lot-to-lot performance
- Optimized products for the analysis of amniotic fluid, chorionic villus, peripheral blood, bone marrow, and hematopoietic cells
- Delivers accelerated cell growth with high mitotic index and excellent chromosomal morphology
- Clean and reproducible results saving lab time with quick analysis and easy interpretation

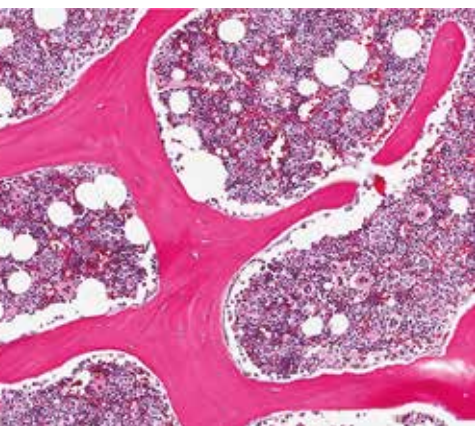
### Quality Control

- Manufactured in compliance with the FDA's quality system regulation (cGMP) and the current requirements of ISO 9001 and ISO 13485
- Extensive QA testing for sterility, endotoxin, and adventitious agent

### Support

- Regional technical support
- Documentation and traceability documentation including Certificate of Analysis, and Certificates of Origin
- Backed by more than 35 years of media development and manufacturing experience

# AMNIOTIC FLUID AND CHORIONIC VILLUS CULTURE

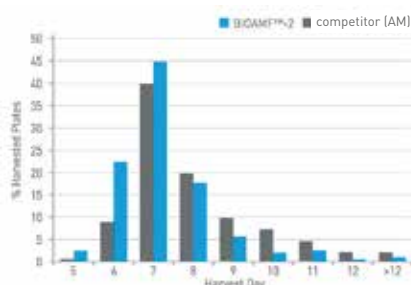


## Optimized media for prenatal diagnostics

The BIO-AMF™ family of cytogenetic media are designed for primary culture of human amniotic fluid (AMF) cells and chorionic villi (CV) samples intended for karyotypic analysis. High mitotic index enables the accelerated growth of cells for rapid detection and enhanced analysis of chromosomal abnormalities. With BIO-AMF™ media, chromosome karyotyping time is greatly reduced, with significantly high cell yield by Day 7 as compared to conventional media (Figure 1).

The BIO-AMF™ media are easy to use and application-validated for cytogenetic analysis, giving reproducible results that are easy to analyze and interpret.

The enhanced buffering capacity of BIO-AMF™ media is ideal for AMF and CV cells cultured in both open (5% CO<sub>2</sub>) and closed systems. BIO-AMF™-2 and BIO-AMF™-3 are ready-to-use complete media, requiring no serum or additional supplements.



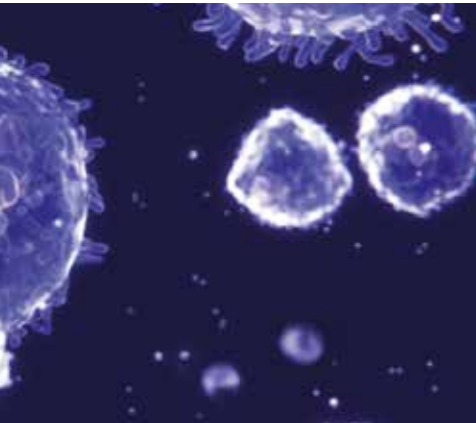
**Figure 1:** Comparison of the percentage of harvested plates according to harvest day between BIO-AMF™-2 and a competitor (AM). Data provided by Dr. Ayala Frumkin, Hadassah Medical Center, Israel.

	BIO-AMF™-1	BIO-AMF™-2	BIO-AMF™-3
<b>Open &amp; Closed Systems</b>	✓	✓	✓
<b>Cell Types</b>	AMF and CVs	AMF and CVs	AMF and CVs
<b>Advantage</b>	Rapid growth of AMF and CV cells	<ul style="list-style-type: none"> <li>• One bottle</li> <li>• Ease-of-use</li> <li>• Rapid growth of AMF and CV cells</li> </ul>	<ul style="list-style-type: none"> <li>• Less epithelial cells</li> <li>• Improved banding</li> </ul>
<b>Complete Medium</b>	Two-part product	Yes	Yes
<b>Chromosome Karyotyping time</b>	Up to 10 days	Up to 8 days	Up to 12 days
<b>Stability (after thawed)</b>	14 days*	7 days*	14 days*
<b>Expiry (when frozen)</b>	15 months (basal medium) 24 months (supplement)	24 months	24 months

\* For longer storage and stability dispense into aliquots and refreeze

Product	Cat. #	Size
BIO-AMF™-1 Medium	01-190-1A	500 mL
	01-190-1B	100 mL
BIO-AMF™-1 Supplement	01-192-1D	10 mL
	01-192-1E	50 mL
BIO-AMF™-2 Medium	01-194-1A	500 mL
	01-194-1B	100 mL
BIO-AMF™-3 Medium	01-196-1A	500 mL
	01-196-1B	100 mL

# BONE MARROW CULTURE



## Optimized medium for short-term cultivation of primary bone marrow cells for chromosome evaluation

BIO-MARROW™ Karyotyping Medium is intended for use in short-term cultivation of primary bone marrow cells for chromosome evaluation.

BIO-MARROW™ Karyotyping Medium is based on RPMI-1640 basal medium supplemented with L-Glutamine, foetal bovine serum, and antibiotics (Gentamicin). The medium does not contain any mitogens or conditioned medium. BIO-MARROW™ Medium was designed for samples with low cell counts and a low mitotic index.

BIO-MARROW™ Karyotyping Medium	
<b>Cell Types</b>	Bone Marrow
<b>Advantage</b>	<ul style="list-style-type: none"> <li>• Quick results, time-saving</li> <li>• Excellent growth promotion also with small culture volumes</li> <li>• Without conditioned medium - no Mitogens for more control over your culture</li> <li>• High mitotic index</li> </ul>
<b>Complete Medium</b>	<ul style="list-style-type: none"> <li>• Ready to use</li> <li>• No further supplements required</li> </ul>
<b>Chromosome Karyotyping Time</b>	48-72 hours
<b>Stability (after thawed)</b>	10 days*
<b>Expiry (when frozen)</b>	24 months
<b>Quality Control</b>	BIO-MARROW™ Karyotyping Medium is tested for sterility, pH, osmolality and endotoxin concentrations, as well as measuring the mitotic index and chromosome banding resolution

\*For longer storage and stability dispense into aliquots and refreeze

Product	Cat. #	Size
BIO-MARROW™ Karyotyping Medium	01-199-1A	500 mL
without conditioned medium	01-199-1B	100 mL

# HEMATOPOIETIC CULTURE



## Optimized medium for hematopoietic cells from bone marrow and peripheral blood

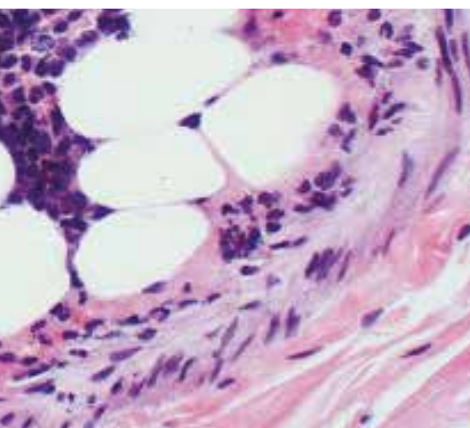
Cytogenetic analysis of human hematopoietic cells using bone marrow aspirates is a standard practice in hematology. Fresh cells or cells grown in short-term cultures often yield an insufficient number of mitotic cells and repeated aspirations are required. BIO-HEMATO™ Karyotyping Medium was developed to stimulate the proliferation of human hematopoietic cells from bone marrow as well as from peripheral blood. BIO-HEMATO™ Karyotyping Medium significantly improves the Mitotic Index and accelerates cell growth and is optimized for use with samples which contain a low amount of cells and/or low Mitotic Index. Therefore particularly effective for karyotyping of acute non-lymphocytic leukemias and various stages of chronic myelogenous leukemia, as well as other hematological disorders such as myelodysplastic syndrome and polycythemia vera. BIO-HEMATO™ Karyotyping Medium is based on MEM-Alpha basal medium supplemented with L-Glutamine, foetal bovine serum, antibiotics (gentamicin) and conditioned medium.

BIO-HEMATO™ Karyotyping Medium	
<b>Cell Types</b>	Hematopoietic cells
<b>Advantage</b>	<ul style="list-style-type: none"> <li>• Quick results, time-saving</li> <li>• Excellent growth promotion also for samples with low cell count and/or low mitotic index</li> <li>• Contains conditioned media to stimulate fast cell growth</li> <li>• Works with both bone marrow and peripheral blood</li> <li>• Unique formulation</li> </ul>
<b>Hematological Disorders</b>	<ul style="list-style-type: none"> <li>• The medium effective for acute non-lymphocytic leukemias and various stages of chronic myelogenous leukemia</li> <li>• Hematological disorders such as myelodysplastic syndrome and polycythemia vera</li> </ul>
<b>Complete medium</b>	<ul style="list-style-type: none"> <li>• Ready to use</li> <li>• Contains conditioned medium with better performance than Giant Tumor Cells (GTC)</li> <li>• No further supplements required</li> </ul>
<b>Chromosome Karyotyping Time</b>	48-72 hours
<b>Stability (after thawed)</b>	10 days*
<b>Expiry (when frozen)</b>	24 months
<b>Quality Control</b>	BIO-HEMATO Medium is tested for sterility, pH, osmolality and endotoxin concentrations, as well as measuring the mitotic index and chromosome banding resolution

\*For longer storage and stability dispense into aliquots and refreeze

ORDER INFORMATION		
Product	Cat. #	Size
BIO-HEMATO™ Karyotyping Medium	01-200-1A 01-200-1B	500 mL 100 mL

# BLOOD LYMPHOCYTE CULTURE



## Optimized media for short term culture of peripheral blood lymphocytes

Blood cell karyotyping is an important tool in modern human cytogenetics, providing information about chromosomal abnormalities, their frequency in the population, and the relationship between specific chromosomal abnormalities and phenotypic effects. BIO-PB™ Karyotyping Medium is specifically optimized for short-term culture of peripheral blood lymphocytes for chromosome analysis. No addition of serum, glutamine, or antibiotics is required.

### BIO-PB™ Karyotyping Medium (with and without PHA)

<b>Cell Types</b>	Lymphocytes
<b>Advantage</b>	<ul style="list-style-type: none"><li>• Quick results, time-saving</li><li>• Excellence growth promotions</li><li>• Flexibility for PHA supplementation</li><li>• High mitotic index</li><li>• Reliable results</li></ul>
<b>Complete medium</b>	<ul style="list-style-type: none"><li>• Ready to use</li><li>• No further supplements required</li></ul>
<b>Chromosome Karyotyping Time</b>	48-72 hours
<b>Stability (after thawed)</b>	10 days*
<b>Expiry (when frozen)</b>	24 months
<b>Quality Control</b>	BIO-PB™ Karyotyping Medium is tested for sterility, pH, osmolality and endotoxin concentrations, as well as measuring the mitotic index and chromosome banding resolution

\*For longer storage and stability dispense into aliquots and refreeze

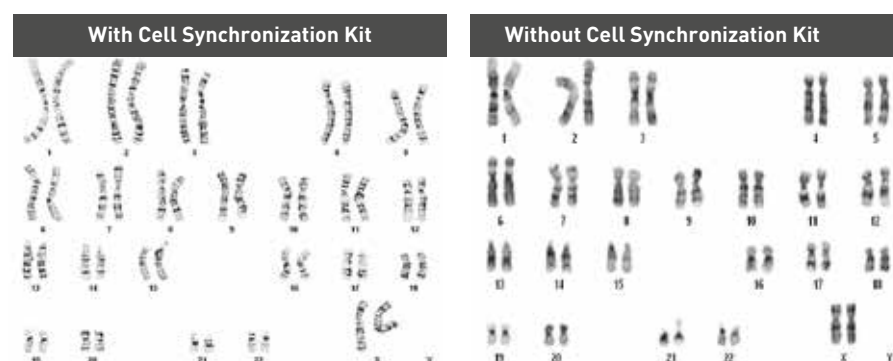
Product	Cat. #	Size
BIO-PB™ Karyotyping Medium, with PHA	01-201-1A	500 mL
	01-201-1B	100 mL
BIO-PB™ Karyotyping Medium, without PHA	01-198-1A	500 mL
	01-198-1B	100 mL

# CELL SYNCHRONIZATION

## High resolution cytogenetic analysis for detailed analysis of the karyotype.

The blood cell karyotyping method was developed to provide information about chromosomal abnormalities. Lymphocyte cells do not normally undergo subsequent cell divisions. In the presence of a mitogen, lymphocytes are stimulated to enter into mitosis by DNA replication. After 48-72 hours MTX, a mitotic inhibitor, is added to block cells in the S-phase of cell cycle. After 16-18 hours most of the dividing cells in culture are in the S-phase. After treatment by hypotonic solution, fixation and staining, chromosomes can be microscopically observed and evaluated for abnormalities. High resolution analysis is a special manipulation of the routine blood karyotyping procedure designed to provide a large number of mitotic figures in late prophase or prometaphase. At this stage of mitosis the chromosomes are longer and less condensed. With Cell synchronization kit the chromosomes will show greater level of band resolution not seen in routine analysis.

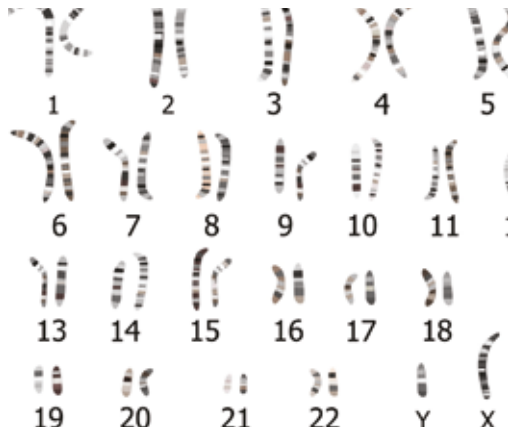
### Comparison between karyogram of peripheral blood cells using BIO-PB™ Karyotyping medium (Cat.# 01-201-1) with or without Cell Synchronization Kit (Cat.# 12-008-60)



	Cell Synchronization Kit
<b>Cell Types</b>	Amniotic Fluid, Chorionic Villi, Bone Marrow, Lymphocytes and Hematopoietic cells
<b>Advantage</b>	<ul style="list-style-type: none"> <li>• Large number of mitotic figures</li> <li>• Longer and less condensed chromosomes</li> <li>• High level of band resolution</li> <li>• Detailed analysis of the karyotype</li> </ul>
<b>Kit Components</b>	<ul style="list-style-type: none"> <li>• Methotrexate (Amethopterin)</li> <li>• Thymidine</li> </ul>

ORDER INFORMATION		
Product	Cat. #	Size
Cell Synchronization Kit	12-008-60	60 reactions

# KARYOTYPING REAGENTS



## Quality reagents for cytogenetic labs

Biological Industries offers a complete range of products and reagents for your cytogenetic karyotyping needs from the start to finish, including colcemid, PHA, and a cell synchronization kit for high-resolution chromosomal studies.

Product	Cat. #	Size
Amphotericin B (10X) Solution	03-029-1B	100 mL
	03-029-1C	20 mL
Amphotericin B Solution	03-028-1B	100 mL
	03-028-1C	20 mL
Colcemid (Demecolcine) Solution	12-004-1D	10 mL
Phytohemagglutinin-M (PHA-M), Liquid	12-009-1H	5 mL
Potassium Chloride (KCl), 0.075 Molar	12-005-1A	500 mL
	12-005-1B	100 mL
Sodium Citrate Solution	01-934-1A	500 mL
Trypsin (0.5%), EDTA (0.2%) (10X)	03-051-5B	100 mL



## RELATED PRODUCTS

Product	Cat. #	Size
Aquaguard™-1 Solution for disinfecting water baths of CO <sub>2</sub> incubators	01-867-1B	100 mL
Aquaguard™-2 Solution for disinfecting water baths	01-916-1E	50 mL
Pharmacidal™ Spray	IC-110100	1 L
	IC-110100-G	5 L
EZ-PCR™ Mycoplasma Test Kit	20-700-20	20 Assays
BIOMYC™-1 Antibiotic Solution	03-036-1B	100 mL
BIOMYC™-2 Antibiotic Solution	03-037-1B	100 mL
BIOMYC™-3 Antibiotic Solution	03-038-1B	100 mL
RPMI 1640	01-100-1A	500 mL
RPMI 1640 without L-Glutamine	01-101-1A	500 mL
RPMI 1640 Medium with HEPES	01-106-1A	500 mL
DPBS, without Calcium and Magnesium	02-023-1A	500 mL
Gentamycin Sulfate Solution	03-035-1B	100 mL
Kanamycin Sulfate Solution	03-049-1B	100 mL
L-Glutamine	03-020-1B	100 mL
MEM-alpha, no nucleosides, high glucose	01-043-1A	500 mL
Hepes Buffer Solution	03-025-1B	100 mL
Penicillin-Streptomycin-Nystatin Solution	03-032-1B	100 mL
Penicillin-Streptomycin-Amphotericin B Solution	03-033-1B	100 mL
Water, Cell Culture Grade	03-055-1A	500 mL