



# Classical Cell Culture Solutions

FOR HIGH-QUALITY RESEARCH RESULTS

Leaders in development and  
manufacture of specialized and  
classical media for over 45 years.

# With You At Every Step

Providing optimal conditions  
for mammalian cells

From laboratories to large-scale production, and in fields as diverse as the manufacture of biotherapeutic drugs and the growth of embryos after *in vitro* fertilization, products and services from FUJIFILM Irvine Scientific enable scientists and clinicians to generate sufficient numbers of fully functional, "fit-for-purpose" mammalian cells grown or maintained under optimal conditions.

## Whatever Your Area of Work, We Can Help

- Produce high-quality research results using premium products
- Maximize productivity during development and large-scale production of biologics
- Fulfill the potential for novel, cell-based therapeutics
- Contribute to successful outcomes in clinical diagnostics and reproductive medicine

## High-Quality Results Using Premium Classical Media

Developed during the 1950s, many classical media are still used for routine cell culture, thereby contributing to our understanding of biological mechanisms in normal and diseased states. Since 1970, FUJIFILM Irvine Scientific has supplied premium classical media and supplements to research, industrial, and clinical laboratories.

## Obtain Reliable Information From Cells Grown Under Optimal Conditions

Select the combination of products best suited for your specific cell type and final application.

- Choose from a broad range of media, supplements, and reagents
- Suitable for a wide range of adherent and suspension mammalian cells
- Support growth of mammalian cells in serum and serum-free formulations

## Ensure Consistent Performance

Industry-leading manufacturing and quality systems ensure lot-to-lot consistency. Products are manufactured according to cGMP guidelines using quality raw materials. Shelf lives of at least two years and an easy reserve/hold policy secure your future work.



cGMP manufacture

FDA-regulated

ISO 13485:2016 certified

DMFs filed with US  
FDA for many media  
and solutions

# The Markets We Serve

## Cell Therapies

PRIME-XV media: Fulfill the potential of novel, cell-based therapeutics.

## Biopharmaceuticals

BalanCD media: Maximize productivity during development and production of biotherapeutics and vaccines.

## Reproductive Medicine

FUJIFILM Irvine Scientific media: Improve workflow efficiency and contribute to increased pregnancy rates.

## Clinical Diagnostics

CHANG media: Enable time- and cost-efficient cytogenetic analysis.

## General Research

Premium classical media: Ensure high-quality research.

## Media Services

Get faster to market with experienced support.



## Manufacturing Services

Work with a reliable, versatile partner.

**Partner with us.** We can design and manufacture the media that you need.

# Cell Culture Basal Media

Premium products for consistent performance

## MEM and Alpha-MEM

Minimum Essential Medium (MEM) was developed by Harry Eagle in the 1950's to contain the optimal concentration of amino acids that would closely approximate the protein composition of mammalian cells. MEM is one of the most widely used synthetic cell culture basal media supporting a wide range of adherent cells grown in monolayers, such as fibroblasts.

Alpha-MEM is a modified Eagle's MEM that includes Earle's Balanced Salts. When supplemented with serum or serum substitutes, Alpha-MEM is suitable, and commonly used, for culturing bone marrow- and amniotic fluid-derived cells, including progenitor cells.

## DMEM and HAM'S F-12/DME

Dulbecco's Modified Eagle's Medium (DMEM) is a modification of Basal Medium Eagle (BME) containing two- to four-fold higher concentrations of glucose, amino acids, and vitamins to better support highly proliferative cells such as embryonic cells. Ham's F-12/DME is a 1:1 mixture of Ham's F-12 and DMEM. This extremely rich, complex medium is commonly selected as the basal medium for the cultivation and study of challenging cell lines or primitive cells, such as neural progenitors.

## IMDM

Iscove's Modified Dulbecco's Medium (IMDM) is a modification of DMEM containing selenium with additional amino acids, vitamins, and inorganic salts to support rapidly proliferating, high-density cell cultures. It is ideal for the expansion of suspension cells such as bone marrow- or peripheral blood-derived hematopoietic cells including hematopoietic progenitors and activated lymphocytes.

- Animal-component free
- Chemically defined
- GMP manufacture



Item	Catalog #	Size†	Additional Information	Shelf Life*
MEM 1X Earle's Salts w/o NEAA	9126	500 mL 1 L	Contains 2200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
MEM NEAA 1X Earle's Salts	9130	500 mL	Contains 2200 mg/L sodium bicarbonate and non-essential amino acids. Does not contain L-glutamine.	2 years
Non-Essential Amino Acids 100X for MEM	9304	100 mL	Designed for use with MEM. Contains 100X NEAA compared to MEM NEAA 1X Earle's Salts.	2 years
Alpha MEM Earle's Salts w/o Nucleosides	9142	100 mL 500 mL	Contains 2200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
Alpha MEM Earle's Salts	9144	100 mL 500 mL	Contains deoxyribonucleosides, ribonucleosides, and 2200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
DME High Glucose w/o L-Glutamine	9024	500 mL 1 L	Contains 4500 mg/L glucose, 3700 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
DME High Glucose	9031	500 mL 1 L	Contains 4500 mg/L glucose, 3700 mg/L sodium bicarbonate, L-glutamine.	2 years
Deficient DME High Glucose	9041	500 mL	Contains 4500 mg/L glucose and 3700 mg/L sodium bicarbonate. Does not contain phenol red or L-glutamine.	2 years
Iscove's Modified Dulbecco's Medium	9032	500 mL 1 L	Contains 25 mM HEPES, and 3024 mg/L sodium bicarbonate. Does not contain L-glutamine or alpha-thioglycerol.	3 years

\*From date of manufacture.

† 5 L, 10 L, 20 L, 100 L, and 200 L bags available upon request.

# Cell Culture Basal Media

Premium products for consistent performance

## Ham's Medium

Ham's medium was originally developed to support clonal expansion of Chinese Hamster Ovary (CHO) and mouse L cells. Together with serum or serum-derived supplements, Ham's medium is commonly used for a variety of rodent cell cultures including mouse hybridoma, rat, and rabbit cells. Ham's media are available in various formulations, including Ham's F-10, Ham's F-12, and Ham's F-12K (Kaighn's), each distinguished by a distinctive amino acid and salt formulation, and have been reported to support the growth of differentiated cells and primary cultures.

## McCoy's 5A Medium

McCoy's 5A medium is a modification of Basal Medium Eagle (BME) with changes in amino acid compositions to support optimal hepatoma cultures. Containing additional vitamins, high phosphate, and Bacto peptone, McCoy's 5A medium has been demonstrated to support primary cell cultures from many normal adult tissues, including bone marrow, testes, kidney, skin, and gingiva.

## Click's Medium (EHAA)

Click's Medium is a modification of Eagle's Essential Medium with Hanks' Salts (HEMEM) that contains higher concentrations of essential amino acids in addition to non-essential amino acids, sodium pyruvate, and nucleic acid precursors. It is commonly used to support clonal cultures of murine T cells and hybridomas.

## RPMI 1640

RPMI 1640 was developed at the Roswell Park Memorial Institute in 1966 for growing normal and neoplastic peripheral blood-derived leukocytes. Additionally, it has been used to cultivate a wide variety of cells in suspension or loosely attached cells such as hybridoma cells. When supplemented with serum or serum substitutes, RPMI 1640 is the most commonly used basal medium for long-term culture of activated T-lymphocytes.

Animal-component free  
Chemically defined  
GMP manufacture



Item	Catalog #	Size <sup>†</sup>	Additional Information	Shelf Life*
Ham's F-10	9056	100 mL 500 mL	Contains 1200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
Ham's F-12	9058	500 mL	Contains 1176 mg/L sodium bicarbonate. Does not contain L-glutamine, or linoleic acid.	2 years
Ham's F-12/DME High Glucose 1:1 Mixture	9052	500 mL 1 L	Contains 3151 mg/L glucose, and 1200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
Ham's F-12K (Kaighn's Nutrient Mixture F-12)	9077	500 mL 1 L	Contains 2500 mg/L sodium bicarbonate. Does not contain ascorbic acid, linoleic acid, or L-glutamine.	2 years
McCoy's 5A Medium	9090**	500 mL	Contains 3000 mg/L glucose, and 2200 mg/L sodium bicarbonate. Does not contain L-glutamine.	2 years
Click's Medium (EHAA)	9195	500 mL	Contains 1350 mg/L sodium bicarbonate. Does not contain L-glutamine or 2-mercaptoethanol.	2 years
Modified RPMI 1640	9154	100 mL	Contains 2000 mg/L sodium bicarbonate. Does not contain folic acid.	2 years
RPMI Medium 1640 1X HEPES	9157	500 mL	Contains L-glutamine and 25 mM HEPES.	2 years
RPMI Medium 1640 1X HEPES w/o L-Glutamine	9159	100 mL 500 mL	Contains 25 mM HEPES.	2 years
RPMI Medium 1640 w/o L-Glutamine	9160	100 mL 500 mL 1 L	Contains 2000 mg/L sodium bicarbonate.	3 years
RPMI Medium 1640 with L-Glutamine	9161	100 mL 500 mL 1 L	Contains L-glutamine, 2000 mg/L sodium bicarbonate.	2 years

\* From date of manufacture.

† 5 L, 10 L, 20 L, 100 L, and 200 L bags available upon request.

\*\* Animal-derived product.

# Buffered Salt Solutions

For convenience and consistency

## Hanks' Balanced Salt Solution (HBSS)

Hanks' Balanced Salt Solution (HBSS) maintains pH and osmotic balance, as well as provides cells with water and essential inorganic ions. HBSS is suitable for use in sealed culture flasks incubated in air.

## Phosphate Buffered Saline Solution (PBS)

A common diluent and rinsing solution, Phosphate Buffered Saline Solution (PBS) maintains cell culture media in the physiological pH range. PBS is also useful for reconstituting enzymes for tissue dissociation or lifting cells from substrates.

## Potassium Chloride Solution

Potassium Chloride Solution is used in cytogenetic cell harvesting to enlarge cells in order to facilitate sufficient spreading of chromosomes on microscope slides for karyotyping and analysis. This hypotonic solution can also be used as a buffer in general cell culture applications.

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Item	Catalog #	Size†	Additional Information	Shelf Life*
HBSS 1X-Hanks' Balanced Salt Solution	9220	100 mL 500 mL	Contains 350 mg/L sodium bicarbonate and calcium and magnesium salts.	2 years
HBSS 1X-Hanks' Balanced Salt Solution w/o Calcium and Magnesium Salts	9228	100 mL 500 mL	Contains 350 mg/L sodium bicarbonate.	2 years
HBSS 10X-Hanks' Balanced Salt Solution	9230	500 mL	Does not contain sodium bicarbonate or calcium and magnesium salts.	2 years
PBS 1X-Dulbecco's Phosphate Buffered Saline Solution	9236	500 mL 1 L	Contains calcium and magnesium salts. Does not contain phenol red or sodium bicarbonate.	2 years
PBS 1X-Dulbecco's Phosphate Buffered Saline Solution w/o Calcium and Magnesium Salts	9240	100 mL 500 mL 1 L	Does not contain phenol red, sodium bicarbonate, or calcium and magnesium salts.	2 years
PBS 10X-Dulbecco's Phosphate Buffered Saline Solution	9242	500 mL	Does not contain phenol red, sodium bicarbonate, or calcium and magnesium salts.	2 years
Potassium Chloride Solution 0.075 N	9281	100 mL 500 mL	Hypotonic solution (5.59 g of potassium chloride per liter of water) used to swell cells to help spread metaphase chromosomes for karyotyping.	2 years

\* From date of manufacture.

† 5 L, 10 L, 20 L, 100 L, and 200 L bags available upon request.

Read about our media development, optimization, and manufacturing services on page 15.



# Reagents and Supplements

For quality and consistency

Animal-component free  
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GMP manufacture

Item	Catalog #	Size	Additional Information	Shelf Life*
Gentamicin Sulfate Solution – 50 mg/mL	9355	20 mL	Inhibits the growth of a wide variety of Gram-positive and Gram-negative microorganisms. Also effective against various strains of mycoplasma. Recommended concentration for cell culture application: 1 mL/L medium.	2 years
L-Glutamine Solution (200 mM)	9317	100 mL 500 mL	An essential amino acid important for cellular growth. Unstable at physiological pH.	2 years
HEPES Buffer Solution 1M	9319	100 mL	Buffer to maintain pH between 7.2 and 7.6. Suitable for use in cell cultures outside of a CO <sub>2</sub> incubator.	2 years
Non-Essential Amino Acids 100X for MEM	9304	100 mL	Designed for use as a supplement to MEM to increase cell growth and viability.	2 years
Colcemid Solution	9311	10 mL 12x10 mL	Prevents spindle formation during metaphase, stopping cells from continuing mitosis. Prolonged exposure to Colcemid results in shorter chromosomes; shorter exposure reduces the number of metaphases for cytogenetic applications.	2 years
Phytohemagglutinin (PHA)	96691	5 mL	Used to stimulate mitosis in lymphocytes, aiding the analysis of chromosomes in peripheral blood cultures.	2 years
IS Giant Cell Tumor-Conditioned Medium	91006**	50 mL	Derived from human giant cell tumor line containing various growth factors including GMCSF, G-CSF, IL-1, and IL-6. Used as a mitogen to grow human bone marrow and peripheral blood cells.	2 years
PRIME-XV IS21 Supplement (50X)	91142	10 mL	Neural supplement for long-term neuronal cultures.	1 year

\* From date of manufacture.

\*\* Animal-derived product.

# Cell Dissociation and Cryopreservation

For gentle dissociation and reliable storage

## Trypsin and EDTA

Trypsin is a proteolytic enzyme used to dissociate adherent cells from the surface of culture vessels.

EDTA Solution, a calcium chelating agent, can be used as a gentle cell dissociation reagent.

The combination of EDTA with trypsin prevents calcium from inhibiting the enzymatic activity of trypsin.

## Cryopreservation in -80°C to -196°C environments

By following a slow freezing process that minimizes damage from cold shock, PRIME-XV FreezIS enables cryopreservation of a variety of cell types, ranging from human mesenchymal stem cells and induced pluripotent stem cells to rat neural progenitor cells.

For applications requiring a DMSO-free environment, PRIME-XV MSC FreezIS DMSO-Free offers a cryopreservation solution devoid of DMSO. Recommended for human mesenchymal stem/stromal cells.

After cryogenic preservation, cells have been validated for cell markers, viability, and fold expansion over multiple passages.



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Item	Catalog #	Size <sup>†</sup>	Additional Information	Shelf Life*
EDTA Solution 0.526 mM (1:5000)	9314	100 mL	Does not contain phenol red or trypsin.	2 years
Trypsin (1:250) 2.5% 10X Solution	9336**	100 mL	Does not contain EDTA or phenol red.	2 years
Trypsin EDTA 1X in HBSS	9341**	100 mL 500 mL	Contains glucose and phenol red.	2 years
Trypsin EDTA 10X Solution	9342**	100 mL	Does not contain phenol red	2 years

\* From date of manufacture.

† 5 L, 10 L, 20 L, 100 L, and 200 L bags available upon request.

\*\* Animal-derived product.

Item	Catalog #	Size	Additional Information	Shelf Life*
PRIME-XV MSC FreezIS DMSO-Free	91140‡	10 mL 100 mL	Comparable post-thaw cell viability to solutions containing DMSO.	1 year
PRIME-XV FreezIS	91139‡	10 mL 100 mL	Contains 10% DMSO.	1 year

\* From date of manufacture.

‡ For research or further manufacturing use only.

Visit [www.irvinesci.com](http://www.irvinesci.com) to see the growing range of serum-free and chemically-defined PRIME-XV media for expansion, differentiation, and cryopreservation.

# Unrivalled Quality Systems

Giving you peace of mind

FUJIFILM Irvine Scientific products and services are developed according to the highest medical standards. Every product is subject to Quality Systems unrivalled in the industry. Manufacture of proprietary and customized media is fully cGMP compliant and includes a robust Raw Material Program, detailed manufacturing procedures, and adherence to a stringent Quality Management System ensure lot-to-lot consistency.

## Water purity—critical to performance

At FUJIFILM Irvine Scientific we continuously monitor our Water for Injection (WFI) system for microbial levels, endotoxin, conductivity, and Total Organic Carbon (TOC) to ensure that the highest quality is available for producing cell culture media, reconstituting biochemical reagents and as a final rinse water for critical applications.

Our WFI system incorporates a pre-treatment system, vapor compression still and WFI distribution loop. Steps in the process include KDF filtration for chlorine/chloramines destruction, a polisher cation exchange system for the removal of ammonia and a MECO vapor compression pharmaceutical distillation unit for chemical and microbial purification.

Item	Catalog #	Size*	Additional Information
WFI Quality Water: 1L bottle	9309-1L	1 L	Storage 2–30°C
WFI Quality Water: 20 L BPC sealed in a box	9309-20L C 9309-20L BPC	20 L	Storage 2–30°C Testing: Multi-Compendial testing in accordance with Packaged Sterile Purified Water and Sterile Water for Injection Standards USP, EP (JP available on request)
WFI Quality Water: 200 L BPC sealed in a drum	9309-200L BPC	200 L	

\* Standard Sizes: 1 L bottle, 20 L carboy, 20 L bioprocess container (BPC), 200 L BPC  
Custom Sizes: 5 L, 10 L, 100 L, 500 L BPCs available upon request.

# Media and Manufacturing

Services from a reliable, versatile partner helping you at the cutting edge

As research ideas become potential commercial realities, focus grows on providing optimal culture conditions while ensuring regulatory compliance and mitigating risks. A FUJIFILM Irvine Scientific Media Service gives you instant access to over 45 years of knowledge and experience in media development and the associated regulatory requirements of the industry.

FUJIFILM Irvine Scientific is a media supplier for production of multiple blockbuster bio-pharmaceuticals

## Let us design the medium that exactly meets your requirements

FUJIFILM Irvine Scientific continuously meets demands for new, proprietary or customized media solutions for an increasing diversity of cell types offering a range of support services from media screening and selection through to cGMP production.

## Highly responsive turnaround times, flexible production capacity

State-of-the-art facilities in California and Japan provide prescribed redundancy of media manufacture, including designated cGMP and animal component-free work areas and equipment to ensure rapid, uninterrupted supply. Proprietary and customized liquid and powder media are produced and packaged. Liquid media is filled into vials, bottles, or bioprocess containers within aseptic filling suites.





FUJIFILM Irvine Scientific develops and supplies products and services wherever our expertise in the growth and handling of mammalian cells can contribute to the health and well-being of mankind—today and in the future.

Over 45 years  
of knowledge  
and experience

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Innovative products,  
solutions, and services

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Unrivalled  
quality systems

**FUJIFILM**  
Value from Innovation



IrvineScientific  
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