

**PAN**<sup>TM</sup>  
**BIOTECH**

**26** years  
made in  
**Germany!**

[www.pan-biotech.de](http://www.pan-biotech.de)  
[www.pan-biotech.com](http://www.pan-biotech.com)

Dear valued customer

We think that the current biotech industry favors experienced, mid-sized and flexible producers with a broad product portfolio, strong research and development capabilities, best-in-class quality, strong business partner relationships and a wide geographic reach. During the last 26 years PAN-Biotech demonstrated its strength with innovative, first-class quality products and excellent services for cell culture around the globe.

For you, as users and customers of cell culture products, the supply situation has changed rapidly in first quarter of 2013. Due to several mergers and acquisitions of bigger as well as smaller companies there were frictions and changes in supply chains. The customer problems and frustrations were highlighted with the question(s):

Can you deliver / support us / rescue our production...? YES, WE CAN !

We can supply FBS, media, reagents and all other products presented in this catalogue

We can support you

We can develop / optimise your media and much more

Our market prediction for 2013 was more frictions and turbulences. Some of the recent acquisitions went through the same route: logistic changes, lack of customer responsiveness, delivery problems, price increases, intransparency and so on. The overall results for customers was a limited choice of vendors and huge international conglomerates with reduced customer service.

PAN-Biotech still remains as one of a few privately owned, ownership managed companies. We value our customers, we value their needs and requirements, we value product quality, we value openness and transparency, we value service and commitments, we value trust and partnership. We followed along these values for the last 26 years and we intend to keep these values for the next 26 years.

We thank all our existing customers, our dedicated and highly motivated staff and our suppliers and industry partners who made possible

## 26 years biotech made in Germany by PAN-Biotech

And we cordially welcome all our new customers, OEM partners and interested international distributors as well as new business partners. We guarantee you the values described above and our personal commitment for excellent products and services.

Yours sincerely

Christian Niewolik & Jens Hartmann  
Owners & Managing Directors

March, 2014

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# Serum

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# Introduction

## The function of serum in cell cultures

- Stimulates cell growth, proliferation and differentiation through hormonal factors
- Adhesion factors facilitate and enhance cell attachment on culture dishes (bio-matrix)
- Transport and binding proteins provide hormones, minerals and lipids
- Inhibition of toxic substances by binding to serum proteins

## Animal serum

The dose of serum added to a cell culture as nutrient source depends on factors such as cell type, primary culture or cell line, adherent or suspension culture, and usually is in the range of 5 % to 15 % of the total liquid volume and most times used at 10 %.

Serum is produced from animal blood and fetal bovine serum is the most widely used because it contains an especially high amount of growth factors due to its origin – the blood of fetuses is a by-product of slaughtered cattle.

## Advantages of PAN-Biotech

- Own raw material resources in different countries: Australia, South Africa, South America (Brazil) and the United States of America (USA)
- Certificate of Suitability (COS) no. R1-CEP 2002-167-Rev 00
- Licensed according to the EU-decree no. 1774/2002 with vet. no. DE 09 275 0001 14
- Every single batch is fully documented – from the country of origin to the end product
- Every process, from collection of raw serum to production, is specified in standard operating instructions (SOP) which will be provided upon request
- We offer special types of serum: charcoal absorbed, delipidized, dialyzed, gamma irradiated, heat inactivated and gamma globulin reduced
- Highest production and safety standards for serum manufacturing
- Best references from industry and research
- Extensive analyses and tests are presented in Certificate of Analysis (CoA)

We exclusively use serum from guaranteed BSE-free collection areas. In addition, we can also confirm that South Africa, as a country of origin, is free from scrapie. No serum batches from Great Britain as the country of origin are processed by PAN-Biotech. We warrant the submission of a complete documentation, consisting of a certificate of origin and a veterinary certificate, shipping documents and a certificate of analysis. Furthermore, every single procedure during an individual production process is documented and then summarized in a production protocol.

## Certificate of Suitability

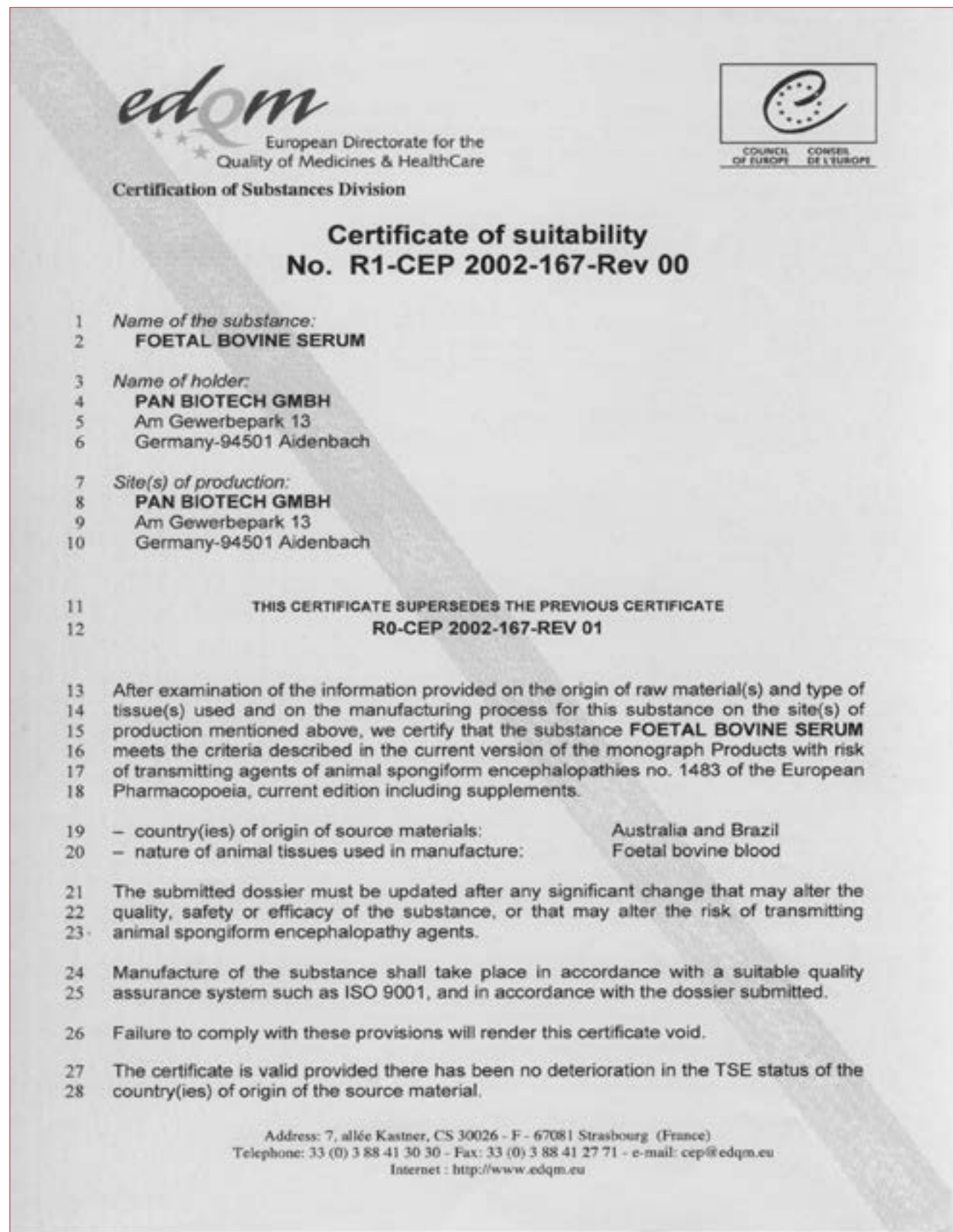
### Declaration

The manufacturing process and quality control testing are performed in accordance with the submitted records and with a suitable quality assurance system in compliance with ISO 9001 quality standards. This quality assurance system verifies traceability and batch consistency. PAN-Biotech conducts internal and external audits for its quality system on an annual basis. In addition, PAN-Biotech audits its raw material serum suppliers on a cyclical basis and reviews the facilities, manufacturing processes and documentation for the collection, handling, storage and transport of raw serum. PAN-Biotech is willing to be inspected, in accordance with the relevant legislation, on request of a relevant authority before and/or after being granted a certificate of suitability.

### Production site:

PAN-Biotech GmbH  
Am Gewerbepark 13  
94501 Aidenbach / GERMANY

**Serum Hotline:** +49(0)8543/6016-55



## Bovine Serum

Bovine serum is the blood fraction remaining after the natural coagulation of blood, followed by centrifugation to remove any remaining red blood cells. The production of bovine serum at PAN-Biotech is tightly controlled, from the collection of serum at the slaughterhouse

and throughout the whole production cycle which is performed without exception in our own production facilities in Aidenbach, Germany. All serum lots are virus and mycoplasma tested.

|  |                  |                                 |
|--|------------------|---------------------------------|
| <b>Fetal Bovine Serum</b> , Australia origin                     | 100 ml<br>500 ml | P30-1301<br>P30-1302            |
| <b>Fetal Bovine Serum</b> , South Africa origin                  | 100 ml<br>500 ml | P30-1505<br>P30-1506            |
| <b>Fetal Bovine Serum</b> , South America origin                 | 100 ml<br>500 ml | P30-3305<br>P30-3306            |
| <b>Fetal Bovine Serum</b> , US admissible                        | 100 ml<br>500 ml | P30-1701<br>P30-1702            |
| <b>Fetal Bovine Serum</b> , US origin                            | 100 ml<br>500 ml | P30-1401<br>P30-1402            |
| <b>Fetal Bovine Serum Premium</b> , South Africa origin          | 100 ml<br>500 ml | P30-1501<br>P30-1502            |
| <b>Fetal Bovine Serum Premium</b> , South America origin         | 100 ml<br>500 ml | P30-3301<br>P30-3302            |
| <b>Sera Pro</b> , Fetal bovine serum, low Endotoxin, EU approved | 100 ml<br>500 ml | P30-5100<br>P30-5500 <b>NEW</b> |
| <b>FBS EU Professional</b> , Filtrated bovine serum, EU approved | 100 ml<br>500 ml | P30-8100<br>P30-8500            |
| <b>Bovine Serum</b> , variable origins                           | 100 ml<br>500 ml | P30-0601<br>P30-0602            |
| <b>Calf serum - newborn</b> , variable origins                   | 100 ml<br>500 ml | P30-0401<br>P30-0402            |

## FBS Good Product Family

The FBS Good product family contains specially processed serum products. Serum of selected batches is filtrated and separated into individual components by a sophisticated chromatographic method. The growth promoting components contained in the serum are then combined and restored in a defined process. Compared to conventional fetal bovine serum the FBS Good product family has been shown to support and promote cell growth of many different cell types equally well or even better.

### Advantages

- Innovative new products
- Minor batch to batch variation
- Once tested – always same quality
- No batch testing required
- No lot reservation required



## FBS Good Product Family

|  |        |           |     |
|--|--------|-----------|-----|
| FBS Good, Filtrated bovine serum, Australia origin   | 100 ml | P40-39100 | NEW |
|  | 500 ml | P40-39500 |     |
| FBS Good, Filtrated bovine serum, EU approved  | 100 ml | P40-37100 | NEW |
|  | 500 ml | P40-37500 |     |
| FBS Good, Filtrated bovine serum, US origin  | 100 ml | P40-38100 | NEW |
|  | 500 ml | P40-38500 |     |
| FBS Good Forte, Filtrated bovine serum with Additive Fortifier, Australia origin                     | 100 ml | P40-49100 | NEW |
|  | 500 ml | P40-49500 |     |
| FBS Good Forte, Filtrated bovine serum with Additive Fortifier, EU approved                          | 100 ml | P40-47100 | NEW |
|  | 500 ml | P40-47500 |     |
| FBS Good Forte, Filtrated bovine serum with Additive Fortifier, US origin                            | 100 ml | P40-48100 | NEW |
|  | 500 ml | P40-48500 |     |
| FBS Good Biotech, Filtrated bovine serum, Australia origin, tested acc. EMEA 1793 and Ph. Eur. 2262* | 100 ml | P40-59100 | NEW |
|  | 500 ml | P40-59500 |     |
| FBS Good Biotech, Filtrated bovine serum, US origin, tested acc. EMEA 1793 and Ph. Eur. 2262*        | 100 ml | P40-58100 | NEW |
|  | 500 ml | P40-58500 |     |

\*tested upon request and produced after receipt of order

## FBS Good

By developing FBS Good we wanted to create a naturally defined serum with a sustained growth promoting property and a higher safety. FBS Good only contains serum of highest quality from defined countries as specified. It is not blended or enhanced by addition of growth factors or proteins.

### FBS Good advantages

- Reproducible growth properties
- Very low endotoxin level
- Suitable for a great variety of cells
- Continuous quality control

## FBS Good Forte

By developing FBS Good Forte we wanted to create a naturally defined serum with an increased growth promoting property and a higher safety. Therefore, additional growth fortifying compounds have been added to increase cell proliferation. FBS Good Forte only contains serum of highest quality from defined countries as specified. In addition, growth promoting and stabilizing compounds (e.g. proteins, salts, sugars, vitamins) have been added to further enhance the stability of the serum as well as the proliferation of many different cell types.

### FBS Good Forte advantages

- Reproducible enhanced growth properties
- Very low endotoxin level
- Suitable for many different cell types
- Continued high quality
- No more batch testing required

## FBS Good Biotech

By developing FBS Good Biotech we wanted to create a naturally defined serum with a sustained growth promoting property and a higher safety. It is tested according to EMA (also known as EMEA) and Ph. Eur. guidelines for use in the bio-pharmaceutical industry. FBS Good Biotech only contains serum of highest quality from defined countries as specified. It is not blended or enhanced by addition of growth factors or proteins.

### FBS Good Biotech advantages

- Tested according to EMEA CPMP/BWP/1793/02
- Tested according to Ph. Eur. 01/2008:2262
- Very low endotoxin level
- Suitable for bio-pharmaceutical processing
- Expanded quality control



## Special Fetal Bovine Serum

|   |        |          |     |
|---|--------|----------|-----|
| Pansera ES, Fetal bovine serum, Australia origin, special designed for embryonic stem cells | 100 ml | P30-2605 | NEW |
|   | 500 ml | P30-2606 |     |
| Pansera ES, Fetal bovine serum, EU approved, special designed for embryonic stem cells      | 100 ml | P30-2601 |     |
|   | 500 ml | P30-2602 |     |
| Pansera ES, Fetal bovine serum, US origin, special designed for embryonic stem cells        | 100 ml | P30-2608 | NEW |
|   | 500 ml | P30-2609 |     |
| Fetal Bovine Serum Biotech, Australia origin, tested acc. EMEA 1793 and Ph. Eur. 2262*      | 100 ml | P40-1301 | NEW |
|   | 500 ml | P40-1302 |     |
| Fetal Bovine Serum Biotech, US origin, tested acc. EMEA 1793 and Ph. Euro. 2262*            | 100 ml | P40-1401 | NEW |
|   | 500 ml | P40-1402 |     |

\*tested upon request and produced after receipt of order

## Pansera ES

Our specially developed, proprietary processing methodology for serum enables us to offer a special fetal bovine serum for embryonic stem cells (ES).

### Advantages

- Reproducible constant growth properties
- Improved cloning efficiency
- More undifferentiated clones
- Permanent strict quality control
- No need for further testing of different batches

## Fetal Bovine Serum Biotech

The bio-pharmaceutical industry is facing a constantly growing demand for high quality, extensively tested fetal bovine serum originating from FDA-approved regions. PAN-Biotech is meeting this demand and offers a new product, Fetal Bovine Serum Biotech, which is tested according to EMA (also known as EMEA) and Ph. Eur. guidelines.

Fetal Bovine Serum Biotech originates exclusively from Australia or the USA, both of which are approved regions by FDA's CFR. The entire production process is followed by close inspections and quality controls – from the collection of raw material to the final production and sterile filtration procedure, all steps are documented and traceable.

Especially a possible contamination with bovine viruses has to be excluded. Therefore, a multitude of tests is performed to meet highest safety requirements.

This product is tested according to EMEA CPMP/BWP/1793/02 and Ph. Eur. 01/2008:2262 upon request. In addition, EMA/410/01 rev. 3 and EMA/CHMP/BWP/457920/2012 rev. 1 are also included as guidelines for testing procedures. Besides extensive testing for viral contamination, supplementary sterility testing is performed before, during and after filling of the product.

### Application

Fetal Bovine Serum Biotech is particularly suited for the production of virus, vaccine, monoclonal antibodies, recombinant protein and growth factors, as well as the manufacture of other bio-pharmaceutical products.





**Certificate of Analysis**  
**Fetal Bovine Serum**  
 Origin: Australia

| Product | Description                          | Catalogue-No.        | Size             |
|---------|--------------------------------------|----------------------|------------------|
| FBS     | Fetal bovine serum, Australia origin | P30-1301<br>P30-1302 | 100 ml<br>500 ml |

Lot No.: P140118

Date of production: January 09, 2014

**Storage, stability, shipping:**

Storage: -20 °C  
 Stability: 6 years from date of production  
 Shipping: on dry ice

| Parameter      | Result       | Units     |
|----------------|--------------|-----------|
| Appearance     | amber liquid | n.a.      |
| pH value       | 7.46         | n.a.      |
| Osmolality     | 296          | mOsm/kg   |
| Hemoglobin     | 13.0         | mg/100 ml |
| Endotoxin      | 0.113        | ng/ml     |
| Total protein  | 38.79        | mg/ml     |
| Albumin        | 29.57        | mg/ml     |
| alpha-Globulin | 5.03         | mg/ml     |
| beta-Globulin  | 4.19         | mg/ml     |
| IgG            | 254          | µg/ml     |
| Glucose        | 109.1        | mg/100 ml |
| Cholesterol    | 51.3         | mg/100 ml |
| Triglycerides  | 45.0         | mg/100 ml |

|                                     | Specification       | Result       |
|-------------------------------------|---------------------|--------------|
| <b>Sterility</b>                    | Incubation at 32 °C | sterile      |
|                                     | Incubation at 20 °C | sterile      |
|                                     | Mycoplasma          | not detected |
| <b>Virus testing</b>                |                     |              |
| Bovine viral diarrhoea virus (BVDV) | negative            | negative     |
| Bovine herpes virus (BHV-1)         | negative            | negative     |
| Para-influenza virus type 3 (PI-3)  | negative            | negative     |
| <b>Antibody testing</b>             |                     |              |
| Bovine viral diarrhoea virus (BVDV) | serological titer   | < 1:2        |
| Bovine herpes virus (BHV-1)         | serological titer   | < 1:2        |
| Para-influenza virus type 3 (PI-3)  | serological titer   | < 1:2        |

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**Performance (cell culture tested)**

| Cell growth (SP2/0-Ag14)               | Seed      | day 2     | day 5      | day 7      | [cells per ml] |
|--|-----------|-----------|------------|------------|----------------|
| Lot no. P140118                        | 1.00x10e3 | 6.28x10e3 | 8.90x10e5  | 1.13x10e6  |                |
| Control serum                          | 1.00x10e3 | 5.34x10e3 | 8.40x10e5  | 1.11x10e6  |                |
| Cell growth (L929)                     |           |           |            |            | [cells per ml] |
| Lot no. P140118                        | 1.00x10e4 | 1.50x10e4 | 8.25x10e5  | 1.09x10e6  |                |
| Control serum                          | 1.00x10e4 | 1.75x10e4 | 8.35x10e5  | 1.10x10e6  |                |
| No. of colonies/clones                 |           |           | absolute % | relative % |                |
| <b>Plating efficiency (L929)</b>       |           |           |            |            |                |
| Lot no. P140118                        | 286       |           | 58         | 105        |                |
| Control serum                          | 257       |           | 55         | 100        |                |
| <b>Cloning efficiency (SP2/0-Ag14)</b> |           |           |            |            |                |
| Lot no. P140118                        | 63        |           | 66         | 102        |                |
| Control serum                          | 62        |           | 65         | 100        |                |

**TABLE 1:**

| Test               | Method  |
|--------------------|---|
| pH value           | Measured with pH-electrode  |
| Osmolality         | Analyzed by freezing point depression   |
| Hemoglobin         | Determined spectrophotometrically at three different wave lengths   |
| Endotoxin          | Kinetic limulus amoebocyte lysate test (LAL)  |
| Total protein      | Colorimetric test (Buret reaction)  |
| Albumin, Globulins | Serum protein electrophoresis (SPEP)  |
| IgG                | Radial immune diffusion   |
| Glucose            | Colorimetric test (Trinder reaction)  |
| Cholesterol        | Colorimetric test (CHOD-PAP)  |
| Triglycerides      | Colorimetric test (Trinder reaction)  |
| Sterility          | The absence of bacterial or fungal contamination is verified by dual incubation with Caso-Bouillon or Thioglycolat-Bouillon according to Ph. Eur. at 32 °C and 20 °C  |
| Mycoplasma         | Three different detection systems are used: DNA-binding fluorescence dye (DAPI), microscopic analysis of microbial cultures and test kits which detect mycoplasma specific enzymes  |
| Virus testing      | The following viruses and the presence of their antibodies are tested by cytopathic effect: Bovine viral diarrhoea virus (BVDV), bovine herpes virus (BHV-1) and parainfluenza virus (PI-3)   |
| Cell growth        | Growth test of murine myeloma cells (SP2/0-Ag14) and murine fibroblasts (L929)  |
| Plating efficiency | Murine fibroblasts (L929) are plated into a Petri dish, stained with Giemsa and after 14 days of incubation the fixed cell colonies are counted (= absolute plating efficiency). The results are normalized to a previously tested reference serum (= relative plating efficiency).           |
| Cloning efficiency | Murine myeloma cells (SP2/0-Ag14) are plated on microtiter plates (one cell per well). After 7 days of incubation the developed cell colonies are counted (= absolute cloning efficiency). The results are normalized to a previously tested reference serum (= relative cloning efficiency). |

**Suitability**  
**FOR RESEARCH USE ONLY!**

These products are intended for research or manufacturing use only.  
 Not for use in animal or human clinical or diagnostic application.

Raw material is collected in regularly inspected facilities and processed by PAN Biotech in compliance with current Ph. Eur. guidelines for Bovine Sera. Processing of raw material into finished serum product is performed by employees of PAN Biotech. Since raw serum is not pre-aged before filtration, turbidity or flocculent debris in form of precipitate may develop upon thawing or storage of the product. This occurrence does not adversely affect the performance of the serum.

Results shown in this compilation have been obtained by carefully performing standard test methods (see table 1). Since results for any specific test may vary depending on methodology, technical equipment, or test substances used, it is suggested that results for particularly important parameters be repeated by the end user of this product.

PAN Biotech has been assigned a Certificate of Suitability (Ref. No. R1-CEP 2002-167-Rev 00; renewed Nov/11/2008) by the European Directorate for the Quality of Medicines (EDQM) for production of bovine serum.

\* n.a. = not available

*I. Podolski* Date: Feb/12/2014  
 Iris Podolski  
 Quality Assurance

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2

Treated Serum

|  |                  |                      |
|--|------------------|----------------------|
| <b>Fetal Bovine Serum</b> , activated charcoal absorbed, EU approved | 100 ml<br>500 ml | P30-2301<br>P30-2302 |
| <b>Fetal Bovine Serum</b> , delipidized, EU approved                 | 100 ml<br>500 ml | P30-3401<br>P30-3402 |
| <b>Fetal Bovine Serum</b> , dialyzed, EU approved                    | 100 ml<br>500 ml | P30-2101<br>P30-2102 |
| <b>Fetal Bovine Serum</b> , gamma irradiated, US origin              | 100 ml<br>500 ml | P30-2008<br>P30-2009 |
| <b>FBS EU Professional</b> , gamma irradiated, EU approved           | 100 ml<br>500 ml | P30-2081<br>P30-2085 |
| <b>Fetal Bovine Serum</b> , heat inactivated, Australia origin       | 100 ml<br>500 ml | P30-1905<br>P30-1906 |
| <b>Fetal Bovine Serum</b> , heat inactivated, US origin              | 100 ml<br>500 ml | P30-1908<br>P30-1909 |
| <b>FBS EU Professional</b> , heat inactivated, EU approved           | 100 ml<br>500 ml | P30-1981<br>P30-1985 |
| <b>Ultra low IgG</b> , Fetal bovine serum, EU approved               | 100 ml<br>500 ml | P30-2801<br>P30-2802 |
| <b>Tetracycline-free serum</b> , Fetal bovine serum, EU approved     | 100 ml<br>500 ml | P30-3601<br>P30-3602 |

Activated charcoal treated serum

Fetal bovine serum is heated in a water bath with dextran and activated charcoal. The activated charcoal, together with the substances bound to it, is then removed by centrifugation and filtration.

Application

- Work involving reduced hormone content (steroids)
- Work involving reduced growth factors (prevention of cell differentiation)
- Receptor studies (e. g. estrogens)
- Minimizes lot-to-lot variations in serum

Delipidized serum

Lipids are removed from serum by affinity chromatography.

Application

- Lipid metabolism studies
- Arteriosclerosis research

Dialyzed serum

Serum is dialyzed with a 10,000 Dalton exclusion membrane against physiological saline solution (alternative DPBS) until the glucose content is below 10 mg/100 ml.

Application

- Radioactive labeling studies
- Hormone-free applications
- Tests intolerant for small molecules such as nucleotides (hypoxanthine, thymidine), amino acids (serine, alanine etc.), sugars or metabolites

Gamma irradiated serum

Serum is exposed to irradiation > 25 kGy

Application

- Biopharmaceutical production
- Virus production
- Vaccine production
- Manufacturing of diagnostic products

Heat inactivated serum

Serum is heated for 30 min to 56 °C in a water bath under repeated gentle mixing.

Application

- Measurements of lactate dehydrogenase in the culture supernatant as a marker for cell damage (serum LDH is inactivated by heat)
- Minimizes lot-to-lot variations in serum (all thermo-labile components are removed)
- Studies on vitamins and growth factors
- Enhance viral safety, since heat-labile viruses are inactivated
- Tests that do not tolerate presence of complement (complement destruction)

Ultra low IgG serum

The average IgG level in fetal bovine serum is in the range of 70 to 330 µg/ml. The IgG content in our Ultra low IgG serum is reduced by affinity chromatography (protein-G affinity column) to max. 5 µg/ml. The biological activity of serum is not affected.

Application

- Antibody production
- Monoclonal antibodies
- Radioactive labeling

Tetracycline-free serum

Fetal bovine serum is tested for absence of tetracycline using the TET-off system (luciferase).

Application

- TET-on / TET-off regulated gene expression
- Transfections
- Expression studies

Other Animal Serum

|                      |                  |                         |
|----------------------|------------------|-------------------------|
| <b>Chicken serum</b> | 100 ml<br>500 ml | P30-0301<br>P30-0302    |
| <b>Donkey serum</b>  | 100 ml<br>500 ml | P30-0101<br>P30-0102    |
| <b>Goat serum</b>    | 100 ml<br>500 ml | P30-1001<br>P30-1002    |
| <b>Hamster serum</b> | 10 ml            | P30-0210                |
| <b>Horse serum</b>   | 100 ml<br>500 ml | P30-0701<br>P30-0702    |
| <b>Lamb serum</b>    | 100 ml<br>500 ml | P30-0801<br>P30-0802    |
| <b>Mouse serum</b>   | 10 ml<br>100 ml  | P30-0200<br>P30-0201    |
| <b>Pig serum</b>     | 100 ml<br>500 ml | P30-0901<br>P30-0902    |
| <b>Rabbit serum</b>  | 100 ml<br>500 ml | P30-1101<br>P30-1102    |
| <b>Rat serum</b>     | 10 ml<br>100 ml  | P30-01901<br>P30-01901E |
| <b>Sheep serum</b>   | 100 ml<br>500 ml | P30-4101<br>P30-4102    |

All serum tested for virus and mycoplasma. Other serum upon request.



Human Serum

Human serum is manufactured from human plasma by addition of calcium chloride. This results in clotting of the plasma. After removing the clot, the human serum is washed and concentrated by ultra-filtration and finally filtered through a combination of depth- and membrane-filters.

Off-the-clot serum (True human serum)

Off-the-clot serum is prepared from human whole blood collected without anti-coagulant, allowed to clot at room temperature and then centrifuged to remove the clot. We provide single donor units as well as pooled off-the-clot serum. Off-the-clot serum is filtered through depth and membrane filters before filling.

|                          |                  |                      |
|--------------------------|------------------|----------------------|
| Human serum              | 100 ml<br>500 ml | P30-2401<br>P30-2402 |
| Human AB serum           | 100 ml<br>500 ml | P30-2501<br>P30-2502 |
| Human AB serum (male)    | 100 ml<br>500 ml | P30-2901<br>P30-2902 |
| Human serum off-the-clot | 100 ml<br>500 ml | P30-2701<br>P30-2702 |

Serum Services

PAN-Biotech offers a variety of services and test procedures for your serum. We deliver these services fast and cost efficient, using the latest up-to-date techniques.

Profit from our expertise! If you need further special testing or particular services please contact PAN-Biotech. In most cases we can find a solution.

Special processing of serum lots

| Treatment         | Method   |
|-------------------|--|
| Charcoal absorbed | Serum is heated in a water bath with dextran and activated charcoal. The activated charcoal, together with the substances bound to it, is then removed by centrifugation and filtration. |
| Delipidized       | Lipids are removed from serum by affinity chromatography   |
| Dialyzed          | Serum is dialyzed with a 10,000 Dalton exclusion membrane against physiological saline solution  |
| Heat inactivated  | Serum is heated for 30 min to 56 °C in a water bath under repeated gentle mixing   |
| IgG reduced       | The IgG content in serum is reduced by affinity chromatography to max. 5 µg/ml. The biological activity of serum is not affected.  |
| Sterile filtered  | Serum passes a series of filters with decreasing pore sizes. The last filtration step is done with a 0.2 µm pore size sterile filter.  |

Virus testing according EMEA guidelines

The following virus tests are performed according to EMEA guideline CPMP/BWP/1793/02:

- Bluetongue and related orbi viruses
  - Bovine adenovirus
  - Bovine parvovirus
- Bovine respiratory syncytial virus (BRSV)
  - Bovine viral diarrhoea virus (BVDV)
  - Rabies virus (rabies)
  - Reo virus
  - Bovine polyoma virus (BPvV)

Serum testing

| Test               | Method  |
|--------------------|---|
| Albumin, Globulins | Serum protein electrophoresis   |
| Bacterial count    | Detection of total number of viable aerobic germs will be either done by membrane filtration or plate-flush-method or as surface method. The microorganisms are detected as colony forming units per ml (CFU/ml) on Caso agar plates.   |
| Cell growth        | Growth test of murine myeloma cells (SP2/0-Ag14) and murine fibroblasts (L929)  |
| Cholesterol        | Colorimetric test (CHOD-PAP)  |
| Cloning efficiency | Murine myeloma cells (SP2/0-Ag14) are plated on microtiter plates (one cell per well). After 7 days of incubation the developed cell colonies are counted (= absolute cloning efficiency). The results are normalized to a previously tested reference serum (= relative cloning efficiency). |
| Endotoxin          | Kinetic limulus amoebocyte lysate test (LAL)  |
| Glucose            | Colorimetric test (Trinder reaction)  |
| Hemoglobin         | Determined spectrophotometrically at three different wave lengths   |
| IgG                | Radial immune diffusion   |
| Mycoplasma         | Three different detection systems are used: DNA-binding fluorescence dye (DAPI), microscopic analysis of microbial cultures and test kits which detect mycoplasma specific enzymes  |
| Osmolality         | Analyzed by freezing point depression   |
| pH value           | Measured with pH-electrode  |
| Plating efficiency | Murine fibroblasts (L929) are plated into a Petri dish. After 14 days of incubation the fixed cell colonies are stained with Giemsa and counted (= absolute plating efficiency). The results are normalized to a previously tested reference serum (= relative plating efficiency).           |
| Sterility          | The absence of bacterial or fungal contamination is verified by dual incubation with Caso-Bouillon or Thioglycolat-Bouillon according to Ph. Eur. at 32 °C and 20 °C  |
| Tetracycline       | Tested by a TET-off system of a CHO-luc cell line. Absence of tetracycline induces expression of luciferase, which is quantified using the luciferase test system from Promega.   |
| Total protein      | Colorimetric test (Biuret reaction)   |
| Triglycerides      | Colorimetric test (Trinder reaction)  |
| Virus testing      | The following viruses and the presence of their antibodies are tested by cytopathic effect: Bovine viral diarrhoea virus (BVDV), bovine herpes virus (BHV 1) and parainfluenza virus (PI-3)   |



Serum-free Systems

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Introduction

Basics

Cell culture, the cultivation of cells isolated from live tissue in vitro (in the test tube), is an acknowledged and valuable tool in biomedical research for the acquisition of reproducible data. In addition, highly effective substances are produced in large-scale for medicine or biopharmaceutical and academic research by means of cell cultures to an ever increasing degree (e.g. insulin, growth factors, monoclonal antibodies, or clotting factors).

The cell culture with serum

Cell cultures in vitro need nutrient solutions, so-called media, which provide an as close as possible simulation of the in vivo situation (in live organism). For this purpose these cell culture media – mixtures of nutrients, salts, trace elements, buffers, growth factors, protective binding and transport proteins and many additional components – have to be supplemented by a most natural, highly complex additive mixture. For many years, animal-derived and also human sera were the means of choice for production related reasons as well as for a lack of alternatives in more defined cell culture nutrients.

Function of serum in cell cultures

- Hormone factors stimulate cell growth, proliferation and differentiation
- Attachment factors favour or enable the attachment of cells to the culture dish (biomatrix)
- Transport and binding proteins support the supply with hormones, minerals and lipids
- Serum proteins bind toxic substances and stabilize sensitive growth factors

However, the use of serum in cell cultures, usually fetal bovine serum (FBS), is problematic for several reasons.

Disadvantages of serum in cell culture

- The composition of serum is variable and depends on the age of the fetus, on the origin and feeding of the animals, and on the time of year at slaughter
- Serum batches have to be tested extensively for their suitability before use
- Test results are often unsatisfactory and often not comparable because of the undefined and inconsistent nature of serum
- Risk of a contamination with bacteria, fungi, mycoplasma and virus from serum
- Risk of contamination with TSE agents (transmissible spongiform encephalopathy)
- Possibility of impurities in the end products due to residual serum proteins or pyrogens
- Time-consuming purification of the end products from culture media containing serum
- Uncertain availability and increasing cost of serum.

The serum-free cell culture

Because of the numerous disadvantages of a serum-containing cell culture, for many years considerable research and development efforts have been undertaken to finally establish cell cultures under serum-free conditions.

Advantages of a serum-free cell culture

- Lower risk of contamination with bacteria, fungi, mycoplasma or virus
- Defined and reproducible formulations result in more convincing and comparable research data
- Time-consuming batch tests are dispensable
- Elimination of a source for possible infectious agents (prions)
- Ease of purification of end products
- Fulfilment of legal requirements for the manufacturing of medical products
- Reduction of impurities in end products by culture residues



Introduction

Definitions

Serum-free media

Serum-free media can be used without any addition of serum or FBS and cell cultures usually perform similar to or even better as with serum. In some compositions, defined and purified components or sub-fractions of serum proteins, growth factors, or hormones (e.g. albumin, transferrin or insulin) are contained, or protein hydrolysates or gland extracts (BPE, BBE) are used.

Protein-free media

Protein-free media support the cell growth without addition of any protein. They contain higher concentrations of amino acids or herbal hydrolysates. Chemically defined formulation do not contain peptones or hydrolysates.

Chemically defined media

Chemically defined media are completely free of any animal or human components. In addition, these formulations do not contain peptone or hydrolysate. All components have a known chemically defined structure and composition. This results in a very constant and stable formulation with positive effects on quality, reproducibility and reduction of inter-batch variability.

PAN-Biotech serum-free media products

Serum substitute

Many users strive to keep their basal medium, because the cells are acquainted to these media over a long time or extensive efforts have been made to find a suitable basal medium. With this in mind, PAN-Biotech has developed easy to use serum substitutes which can fully replace FBS in the medium. Since different cell types (e.g. adherent or suspension cells) require different nutritional and attachment factors, we have developed two different serum substitutes for these kinds of cells. Panexin NTA is designed for adherent cells and Panexin NTS is designed for suspension cells.

These serum substitutes can be used in many cases without an adaptation of the cells and no or little weaning. In this case, our Panexins give an instant advantage over conventional serum containing cultures, eliminating many of the above described limitations of cell cultures with FBS.

Stem and progenitor cell media

Research and development in the field of stem cell biology has been tremendously advanced in the last decade. Today, some cell types are being used in clinical studies or applications and several more are close to being employed in cellular therapy. One important aspect for any application of stem and progenitor cells in patients is the isolation and expansion of these cells under defined conditions. For this purpose, the presence of FBS in such cell cultures is undesirable.

PAN-Biotech is offering a full range of serum-free media for stem and progenitor cells for the most important fields of research and development. Some of these stem cell media are free of animal-derived components, enabling the culture of cells in conditions close to clinical application.

Quality assurance

Each batch of serum-free media is produced only with pretested premium raw materials to ensure the highest quality standards. Water is the main and determining basal ingredient for any cell culture medium. The condition of our pyrogen-free water is of extra purity with a conductance value of 0.055 µS/cm. It is regularly tested, since a minimal variation in water quality will have detrimental effects on the cells in a serum-free culture. Each batch of Panexin or Panserin will not be released unless the quality control process is finished and all the required specifications have been met.

Product Numbers

Serum Substitutes

|                            |        |            |
|----------------------------|--------|------------|
| Panexin NTA <sup>(1)</sup> | 100 ml | P04-95700  |
|                            | 500 ml | P04-95750  |
| Panexin NTS <sup>(1)</sup> | 100 ml | P04-95800  |
|                            | 500 ml | P04-95850  |
| Panexin BMM <sup>(1)</sup> | 100 ml | P04-951SA2 |

Serum-free Media

|   |                        |  |
|---|------------------------|--|
| Panserin 401 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-710401M<br>P04-710401              |
| Panserin 411 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-710411M<br>P04-710411              |
| Pasnerin 411S <sup>(1)</sup>  | 100 ml<br>500ml<br>1 L | P04-7411S0<br>P04-7411S1<br>P04-71411S |
| Panserin 412 <sup>(1)</sup>   | 100 ml<br>500ml        | P04-710412M<br>P04-710412              |
| Panserin 413 with 1 supplement <sup>(3)</sup>                                   | 500 ml                 | P04-710413                             |
| Panserin 416 with 1 supplement <sup>(3)</sup>                                   | 500 ml                 | P04-710416                             |
| Panserin H4000 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-714000M<br>P04-714000              |
| Panserin H8000 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-718000M<br>P04-718000              |
| Panserin C6000 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-716000M<br>P04-716000              |
| Panserin 293A <sup>(1)</sup>  | 100 ml<br>500 ml       | P04-710608M<br>P04-710608              |
| Panserin 293S <sup>(1)</sup>  | 100 ml<br>500 ml       | P04-710609M<br>P04-710609              |
| Panserin T3 <sup>(3)</sup>  | 100 ml<br>500 ml       | P04-710110<br>P04-710100               |
| Panserin ProVero <sup>(3)</sup>   | 100 ml<br>500 ml       | P04-710613M<br>P04-710613              |
| Panserin 701 <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-710701M<br>P04-710701              |
| Panserin 801 with 6 supplements <sup>(3)</sup>                                  | 500 ml                 | P04-710801                             |
| Panserin PX10 <sup>(1)</sup>  | 500 ml                 | P04-710PX10                            |
| Panserin PX40 <sup>(1)</sup>  | 500 ml                 | P04-710PX40                            |
| Spodopan <sup>(1)</sup>   | 100 ml<br>500 ml       | P04-850100<br>P04-850500               |
| Panserin S2 <sup>(1)</sup>  | 100 ml<br>500 ml       | P04-710210<br>P04-710200               |
| Endopan 300 SL ready-to-use <sup>(3)</sup><br>Endopan 300 SL kit <sup>(3)</sup> | 500 ml<br>500 ml       | P04-00650<br>P04-0065K                 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Serum Substitutes

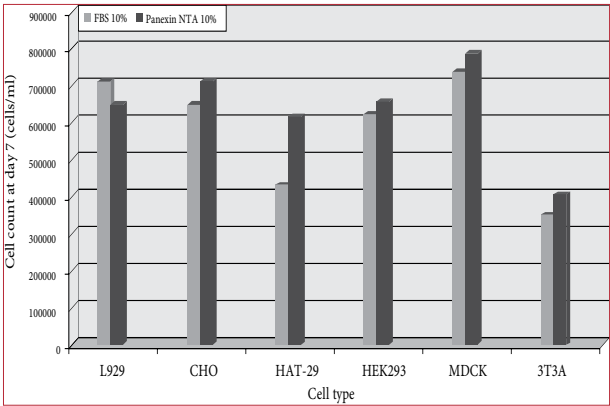
Panexin NTA

**Panexin NTA** is a defined serum substitute for the cultivation of adherent cells under serum-free conditions. Panexin NTA is developed with an unique technology and contains a special 3-dimensional substance release system (3D-SRS) for an optimal support of cells with nutrients and growth stimulants.

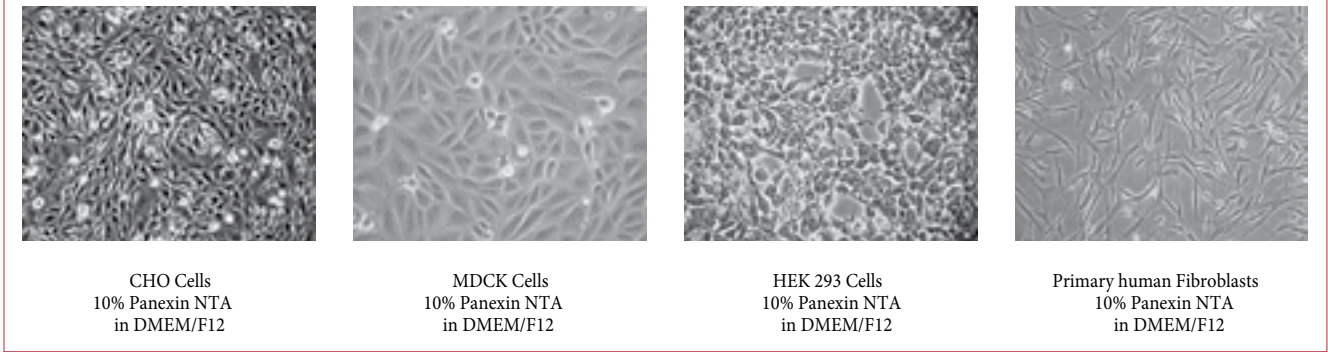
The ready to use, sterile solution is added to the culture medium in a final concentration of 10%. It supports the adherent growth of many cell types in an optimum manner.

Composition

Panexin NTA contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors and hormones in an optimized formulation and a new 3-dimensional substance release system (3D-SRS). Panexin NTA contains no growth factors, undefined hydrolysates or peptones.



**Fig.1:** Efficiency and Growth Stimulation of Panexin NTA compared to FBS (each 10 % in DMEM/F12)



References

a) Hashimoto J et al. (2006) Regulation of Proliferation and Chondrogenic Differentiation of Human Mesenchymal Stem Cells by Laminin-5 (Laminin-332). Stem Cells 24:2346  
b) Traeger T et al. (2008) Detrimental Role of CC Chemokine Receptor 4 in Murine Polymicrobial Sepsis. Infection and Immunity 11:5285

Suitability

Panexin NTA is suitable for the cultivation of a variety of adherent cells under serum-free culture conditions.

Special advantages

It has been shown for many cell lines that Panexin NTA can fully replace FBS. Due to selected and pretested raw materials Panexin NTA batches are very homogeneous. Therefore the complex batch testing known from FBS can be omitted with the use of Panexin NTA. In addition, there is no need to change the previously used basal medium.

Panexin NTA is completely defined and contains no undefined peptones or hydrolysates. Therefore, the interpretation of results from studies on effects of individually added growth factors is easier and more reliable in serum-free conditions. For cell lines which require specific growth factors these should be added in a concentration as previously used. As a basal medium you may use classical standard media such as RPMI 1640, DMEM (high or low glucose), DMEM/F12, IMDM and so on. Make sure that L-glutamine is present in sufficient quantity (possibly supplement glutamine).

Depending on the cell type, some differences in morphology or proliferation rate may be observed with various standard media. Many applications were performed with DMEM or DMEM/F12 for adherent cells. With these combinations very good growth stimulation was achieved in a range of 5% to 15% Panexin NTA.

For more demanding cells an adaptation to Panexin NTA may be necessary.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panexin NTA and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

**Fig.2:** Different Cell Lines in DMEM/F12 with 10 % Panexin NTA

|                            |                  |                        |
|----------------------------|------------------|------------------------|
| Panexin NTA <sup>(1)</sup> | 100 ml<br>500 ml | P04-95700<br>P04-95750 |
|----------------------------|------------------|------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



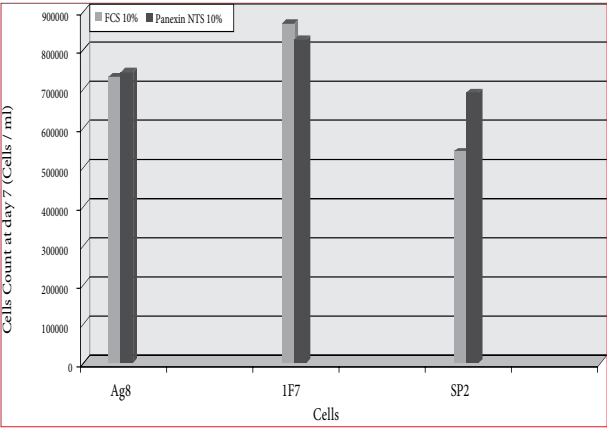
Serum Substitutes

Panexin NTS

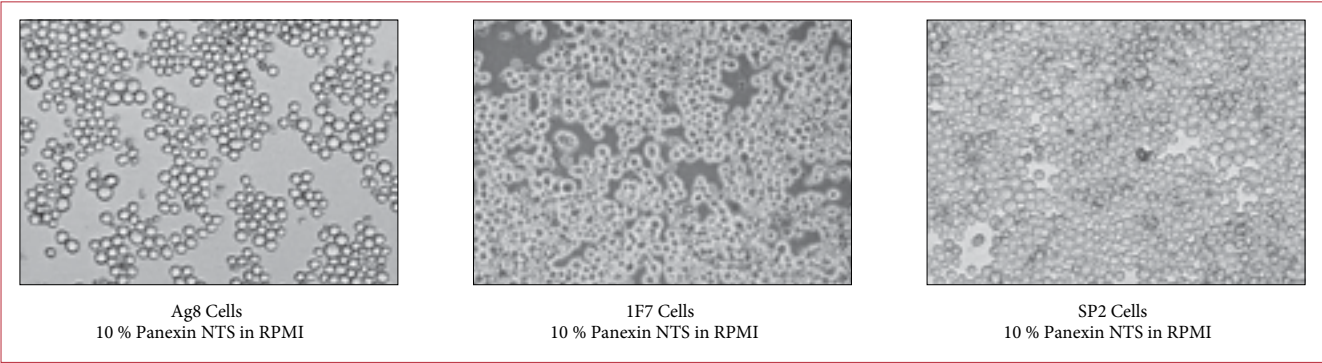
**Panexin NTS** is a defined serum substitute for the cultivation of suspension cells under serum-free conditions. Panexin NTS is developed with a unique technology and contains a special 3-dimensional substance release system (3D-SRS) for an optimal support of cells with nutrients and growth stimulants. The ready-to-use, sterile solution is added to the cell culture medium in a final concentration of 10%. It supports the growth of many cell types in an optimum manner.

Composition

Panexin NTS contains purified proteins, lipids, salts, amino acids, trace elements, and hormones in an optimized formulation and a new 3-dimensional substance release system (3D-SRS). Panexin NTS contains no growth factors, undefined hydrolysates or peptones.



**Fig.1:** Efficiency and Growth Stimulation of Panexin NTS compared to FBS (each 10 % in RPMI)



**Fig.2:** Different Cell Lines in RPMI with 10 % Panexin NTS

|                            |                  |                        |
|----------------------------|------------------|------------------------|
| Panexin NTS <sup>(1)</sup> | 100 ml<br>500 ml | P04-95800<br>P04-95850 |
|----------------------------|------------------|------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Suitability

Panexin NTS is suitable for the cultivation of a variety of non-adherent suspension cells under serum-free conditions.

Special advantages

Panexin NTS can be used for many cell lines to replace FBS. Due to selected and pretested raw materials Panexin NTS batches are very homogeneous. Therefore the complex batch testing known from FBS can be omitted with the use of Panexin NTS. In addition, there is no need to change the previously used basal medium. Panexin NTS is completely chemically defined and contains no growth factors, undefined peptones or hydrolysates. Therefore, the interpretation of results from studies on effects of individually added growth factors is easier and more reliable in serum-free conditions. For cell lines which require specific growth factors, these should be added in a concentration as previously used.

For more demanding cells an adaptation to Panexin NTS may be necessary.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panexin NTS. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

References

a) Breitbach K et al. (2009) Caspase-1 Mediates Resistance in Murine Melioidosis. Infection and Immunity 4:1589  
b) Into T et al. (2008) Regulation of MyD88-Dependent Signaling Events by S Nitrosylation Retards Toll-Like Receptor Signal Transduction and Initiation of Acute-Phase Immune Responses. Molecular and Cellular Biology 4:1338



Serum Substitutes

Panexin BMM

**Panexin BMM** is a defined serum substitute for the cultivation of macrophages from mouse bone marrow (murine bone marrow derived macrophages, BMM) under serum-free conditions. The ready-to-use sterile solution in a final concentration of 5 % is added to the basal medium RPMI 1640, supplemented with 50 µM Mercaptoethanol and 2 ng/ml GM-CSF mur. rec.

Composition

Panexin BMM contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors and hormones in an optimized formulation. It contains no growth factors, undefined hydrolysates or lysates (e. g. Peptones).

Suitability

Panexin BMM has been developed for the generation of murine macrophages from bone marrow under serum-free conditions. This achieves standardized conditions and reproducible results.

|                            |        |            |
|----------------------------|--------|------------|
| Panexin BMM <sup>(1)</sup> | 100 ml | P04-951SA2 |
|----------------------------|--------|------------|

Special advantages

Panexin BMM allows the generation of murine macrophages from bone marrow under standardized serum-free conditions. The results will be more comparable, as undefined components – like in serum-containing cultures – are eliminated. In Panexin BMM matured macrophages will show excellent attachment capabilities.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panexin BMM and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

References

Kristin Eske, Katrin Breitbach, Jens Köhler, Patimaporn Wongprompitak and Ivo Steinmetz (2008). Generation of murine bone marrow derived macrophages in a standardised serum-free cell culture system, Journal of Immunological Methods.

Serum-free Media

Panserin 401

**Panserin 401** is a complete ready-to-use medium for the serum-free cultivation of a multitude of adherent and non adherent cells.

Composition

Based on Iscove's MEM, trace elements, albumin, cholesterol, soya lipids and vitamins were added to the medium. It does not contain any growth or attachment factors.

Suitability

Panserin 401 is a multi-purpose medium suitable for a variety of cells. As the medium contains no growth factors there is a possibility to investigate the effects of specific growth factors added to the cell culture. Panserin 401 does not contain any attachment factors. With some cell types a pre-treatment of the cell culture vessels with gelatine, collagen, poly-D-lysine or fibronectin may support or enable a culture under serum-free conditions. Please note that a coating may be especially important with low seeding densities. With every adaption to serum-free media, changes of the cells should be taken into consideration. These changes may concern morphology, karyotype, surface markers and so on. Thus cells in serum-free medium may not be identical with those from cultures containing serum in which they originated (selection).

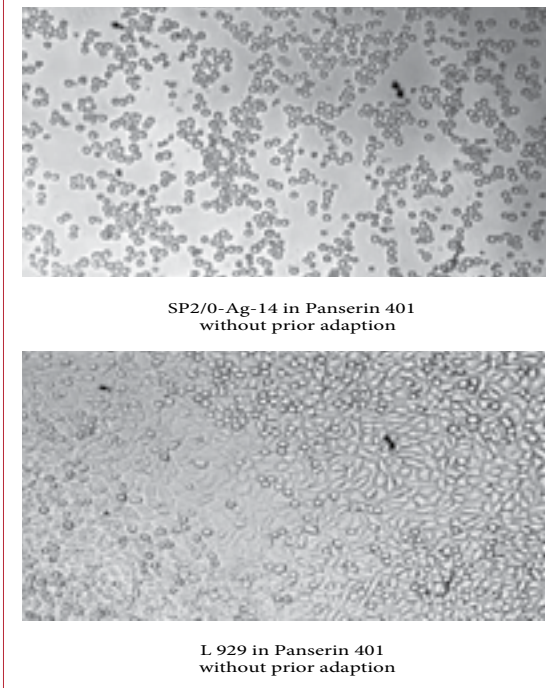


Fig 1.: SP2/O-Ag-14 and L929 in Panserin 401

|                             |        |             |
|-----------------------------|--------|-------------|
| Panserin 401 <sup>(1)</sup> | 100 ml | P04-710401M |
|                             | 500 ml | P04-710401  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Among others the following cells have been cultivated successfully:

- Hybridoma
- Lymphocytes
- Macrophages
- Fibroblasts
- Melanocytes
- Carcinoma cells
- HEK-cells
- HeLa-cells
- CHO-cells

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin 401. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

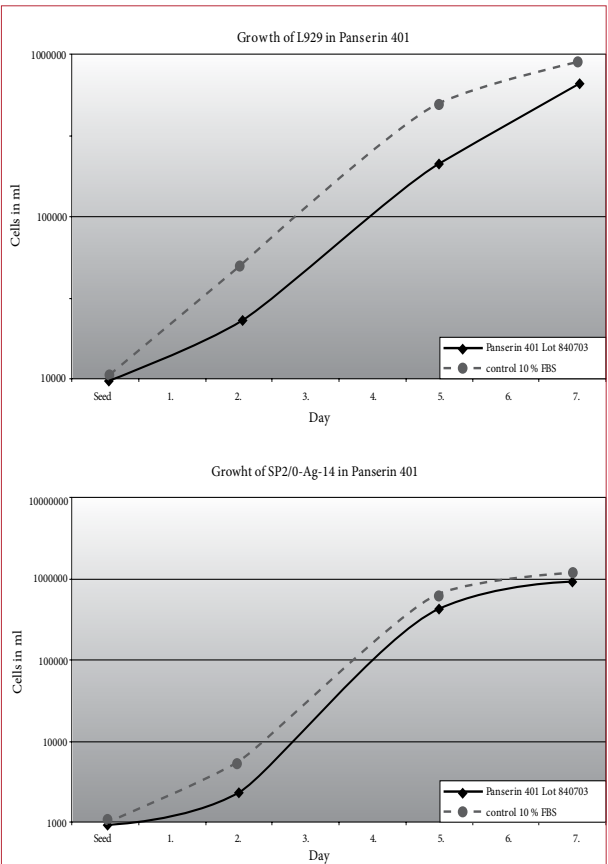


Fig 2.: Growth curves for L929 and SP2/O-Ag-14 in Panserin 401

References

- a) Pilar S et al. (2002) Contribution of CD3γ to TCR regulation and signaling in human mature T lymphocytes. International Immunology 11:1357
- b) Toptan T et al. (2010) Rhadinovirus vector-derived human telomerase reverse transcriptase expression in primary T cells. Gene Therapy 17:653
- c) Martin F et al. (2005) Lentiviral vectors transcriptionally targeted to hematopoietic cells by WASP gene proximal promotor sequences. Gene Therapy 12:715
- d) Montzka K et al. (2010) Expansion of human bone marrow derived mesenchymal stromal cells: serum-reduced medium is better than conventional medium. Cytotherapy 5:587

Serum-free Media

Panserin 411

**Panserin 411** is a complete, ready-to-use medium for the serum-free cultivation of a multitude of adherent and non adherent cells which are Insulin-dependent (e.g. CHO-cells).

**Composition**

Based on Iscove’s MEM, trace elements, albumin, cholesterol, soya lipids, vitamins and insulin were added to the medium. It does not contain any growth or attachment factors.

**Suitability**

Panserin 411 is a multi-purpose medium suitable for a variety of cells. In Panserin 411 adherent as well as non adherent cells can be cultivated. As the medium contains no growth factors there is a possibility to investigate the effects of specific growth factors added to the cell culture. Panserin 411 does not contain any attachment factors. With some cell types a pre-treatment of the cell culture vessels with gelatine, collagen, poly-D-lysine or fibronectin may support or enable a culture under serum-free conditions. Please note that a coating may be especially important with low seeding densities.

With every adaption to serum-free media, changes of the cells should be taken into consideration. These changes may concern morphology, karyotype, surface markers and so on. Thus cells in serum-free medium may not be identical with those from cultures containing serum in which they originated (selection).

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 411 and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

|                              |                         |  |
|------------------------------|-------------------------|--|
| Panserin 411 <sup>(1)</sup>  | 100 ml<br>500 ml        | P04-710411M<br>P04-710411              |
| Panserin 411S <sup>(1)</sup> | 100 ml<br>500 ml<br>1 L | P04-7411S0<br>P04-7411S1<br>P04-71411S |

Panserin 411S

**Panserin 411S** is a complete, ready-to-use medium for the serum-free cultivation of myeloid and lymphoid cells for cytological examination.

**Composition**

Based on RPMI 1640 medium, additional trace elements, albumin, cholesterol, soy lipids, vitamins and hormones are added.

**Suitability**

Panserin 411S is a serum-free complete medium for the cultivation of myeloid and lymphoid cells from peripheral blood or bone marrow. It is therefore suitable for a rapid expansion of blood cells in order to investigate leukemic diseases (ALL, AML, CLL, CML, MPN, MDS). The state of the art diagnostic techniques of leukemic diseases are based on the interaction of cytomorphology including cytochemistry with immunophenotyping, chromosome banding analysis, FISH and molecular genetics. In Panserin 411S the number and quality of metaphases are significantly higher and independent of individual batches as compared to serum-containing media.

**Suitability**

Cells (1x10<sup>7</sup>) are seeded in 5 ml Panserin 411S. Depending on the assay or quality of raw material, an un-stimulated culture and another 1-3 cultures with appropriate growth factors are prepared. The culture time is 24 to 72 hours at 37° C in an incubator with 5% CO<sub>2</sub>.

The processing of the metaphases is done with hypotonic KCl solution and Carnoy’s fixative.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 411S and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin 416

**Panserin 416** is a serum-free medium (basal medium) which is, after supplementation with growth factors, suitable for the production of dendritic cells.

**Composition**

Based on RPMI 1640/DMEM/F-12, trace elements, albumin, cholesterol, soya-lipids and vitamins were added to the medium. A growth factor mixture is also supplied which has to be added to the medium just before use.

**Suitability**

Dendritic cells are highly specialized antigen-presenting cells and can initiate and regulate antigen-specific immune responses. This ability can be used in order to generate immune responses against certain proteins of tumour cells and thus the immune system itself could be able to fight against tumours. Dendritic cells have been isolated from a great variety of non-lymphatic and lymphatic tissues of human beings, mice and other species.

For the generation of tumour vaccines, dendritic cells can be produced from the peripheral blood of tumour patients. In clinical studies the principal effectiveness of a vaccination with dendritic cells has been shown.

Production and serum-free cultivation of dendritic cells from mononuclear cells of peripheral blood (PBMC).

Serum-free cultivation of dentritic cells in Panserin 416 After the last washing step the mononuclear cells are transferred with a cell density of 1 x 10<sup>7</sup> cells/ml into Panserin 416. In order to remove non-adherent cells, culture dishes are put into the incubator for 2 hours. Then the supernatant is carefully taken off and replaced by new Panserin 416. GM-CSF (800 U/ml) and interleukin-4 (500 U/ml) are added as growth factors. The culture dishes are incubated for another 6 days in the incubator and every day half of the medium is replaced by new medium which is supplemented with GM-CSF and IL-4.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 416 and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

|                             |                  |                           |
|-----------------------------|------------------|---------------------------|
| Panserin 412 <sup>(1)</sup> | 100 ml<br>500 ml | P04-710412M<br>P04-710412 |
| Panserin 413 <sup>(3)</sup> | 500 ml           | P04-710413                |
| Panserin 416 <sup>(3)</sup> | 500 ml           | P04-710416                |

Panserin 412

**Panserin 412** is a complete, ready-to-use medium for the serum-free cultivation of a multitude of adherent cells.

**Composition**

Based on Iscove’s MEM, trace elements, albumin, cholesterol, soya lipids, vitamins and insulin were added to the medium. It does not contain any growth or attachment factors.

**Suitability**

Panserin 412 is a multi-purpose medium suitable for a variety of adherent cells. Panserin 412 contains special attachment factors for the successful cultivation of cells that hardly attach. With every adaption to serum-free media, changes of the cells should be taken into consideration. These changes may concern the morphology, the karyotype, the surface marker etc. Thus cells in serum-free medium don’t always have to be identical with those from the culture containing serum in which they originate (selection).

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 412 and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

Panserin 413

**Panserin 413** is a medium for the serum-free cultivation of lymphocytes from whole blood.

**Composition**

Based on RPMI 1640/DMEM-F12, trace elements, albumin, cholesterol, soya-lipids and vitamins were added to the medium. A growth factor mixture is also supplied which has to be added to the medium immediately before use.

**Suitability**

Panserin 413 has been developed for the cultivation of lymphocytes from whole blood. Normally blood cells die rather quickly in culture, only lymphocytes can be cultivated over multiple divisions in culture. To achieve a division of non-proliferating cells, the cells must be stimulated with certain mitogens. These mitogens are mostly herbal lectins (phytohemagglutinin, PHA).

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 413 and can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin H4000

**Panserin H4000** is a protein-free ready-to-use medium for an optimized growth of myeloma and hybridoma-cell lines in suspension culture for the production of monoclonal antibodies. Panserin H4000 is suitable for spinner cultures, roller bottles and tissue culture bioreactors.

Composition

Panserin H4000 consists of a balanced mixture of salts, amino acids, vitamins, trace elements, hormones and is enriched with selected herbal hydrolysates for an optimized growth of myeloma and hybridoma cell lines. As Panserin H4000 is free of animal or human components it is predestined for the use in sensitive production areas (e.g. production of diagnostic or therapeutic tools) where safety requirements prohibit the use of human or animal components.

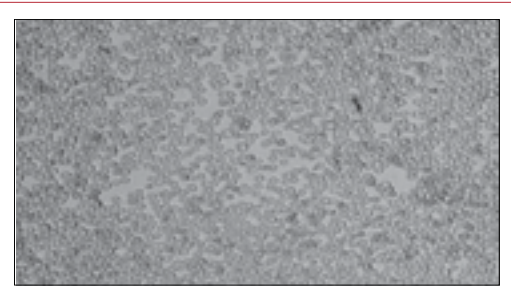
Suitability

Cultivation of myeloma and hybridoma cell lines for the production of monoclonal antibodies.

Special advantages

The formulation of the protein-free Panserin H4000 with a low concentration of plant hydrolysates enables a high cell yield in combination with excellent production rates of monoclonal antibodies. The ready to use protein-free medium allows easy handling and therefore reduces contamination risks and ensures for an easy and economic purification of the final products in downstream processes.

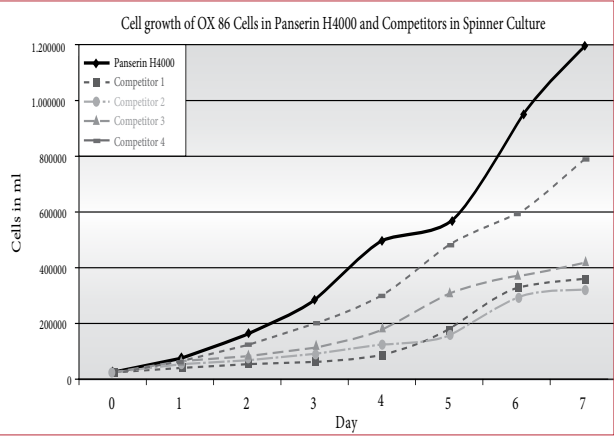
|                               |        |                           |
|-------------------------------|--------|---------------------------|
| Panserin H4000 <sup>(1)</sup> | 100 ml | P04-714000M<br>P04-714000 |
|                               | 500 ml |                           |



SP2/O-Ag-14 in Panserin H4000

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin H4000. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin H8000

**Panserin H8000** is a protein-free, ready-to-use medium for an optimized growth of cholesterol-dependent myeloma and hybridoma cell lines in suspension culture for the production of monoclonal antibodies. Panserin H8000 is suitable for spinner cultures, roller bottles and bioreactors.

Composition

Panserin H8000 consists of a balanced mixture of salts, amino acids, vitamins, trace elements, hormones, bio-available cholesterol and is enriched with selected herbal hydrolysates for an optimized growth of cholesterol dependent myeloma and hybridoma cell lines.

Suitability

Cultivation of cholesterol-dependent myeloma and hybridoma cell lines for the production of monoclonal antibodies.

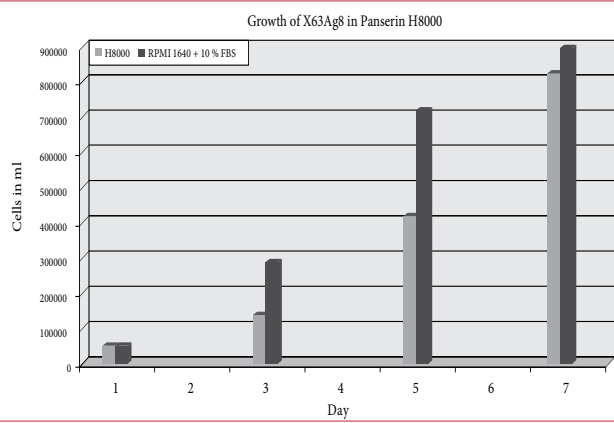
Special advantages

The formulation of the protein-free Panserin H8000 with a low concentration of plant hydrolysates enables a high cell yield in combination with excellent production rates of monoclonal antibodies. As Panserin H8000 is free of animal or human components it is predestined for the use in sensitive production areas (e.g. production of diagnostic or therapeutic tools) where safety requirements prohibit the use of human or animal components. The ready-to-use protein-free medium allows easy handling and therefore reduces contamination risks and ensures an easy and economic purification of final products in the downstream processing.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin H8000. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

Most hybridoma cell lines can be directly transferred from a serum-containing culture into a protein-free suspension culture. It should be noted here that the seeding density should be at least 1-3 x 10<sup>5</sup> cells.



|                               |        |                           |
|-------------------------------|--------|---------------------------|
| Panserin H8000 <sup>(1)</sup> | 100 ml | P04-718000M<br>P04-718000 |
|                               | 500 ml |                           |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Serum-free Media

Panserin C6000

**Panserin C6000** is a protein-free ready to use medium for an optimized growth of CHO-cells (Chinese Hamster Ovary) and their recombinant derivates in suspension culture. These cells are often used for the production of recombinant proteins for diagnostic or therapeutic purposes. Panserin C6000 is suitable for spinner cultures, roller bottles and tissue culture flasks and bioreactors.

Composition

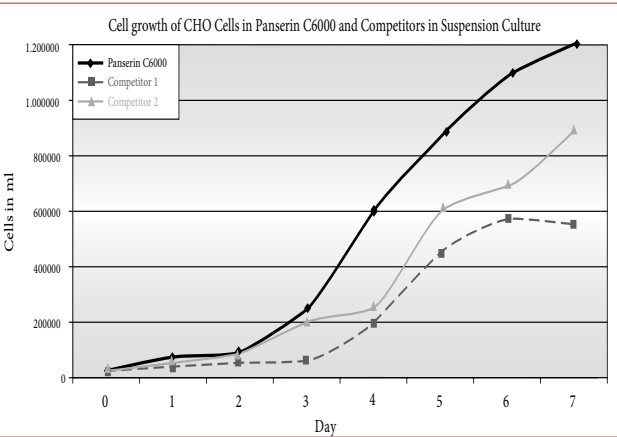
Panserin C6000 consists of a balanced mixture of salts, amino acids, vitamins, trace elements, hormones and is enriched with select herbal hydrolysates for an optimized growth of CHO-cells in suspension culture. As Panserin C6000 is free of animal or human components it is predestined for the use in sensitive production areas (e.g. production of diagnostic or therapeutic tools) where safety requirements prohibit the use human or animal components.

Suitability

Protein-free cultivation of CHO-cells and their recombinant derivates in suspension culture for the production of recombinant proteins for diagnostics or therapeutic purposes.

Special advantages

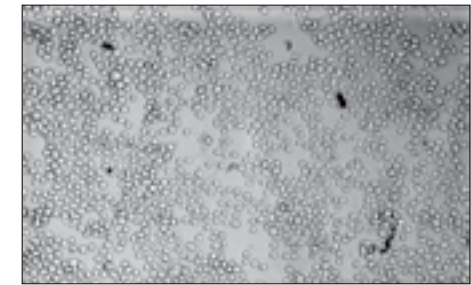
The formulation of the protein-free Panserin C6000 with a low concentration of plant hydrolysates enables a high cell yield in combination with excellent production rates of recombinant proteins. The ready to use complete protein-free medium allows easy handling and therefore reduces contamination risks and ensures for an easy and economic purification of the final products in downstream processes. Due to the optimized composition of Panserin C6000 the cells expand and grow in single-cell suspension with a very low tendency to form aggregates.



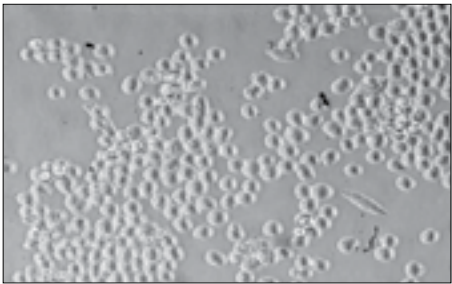
Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin C6000. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

Most CHO-cells can be directly transferred from a serum containing adherent culture into the protein-free suspension culture. In most cases the stable suspension culture is developing within about 2 weeks.



CHO cells in Panserin C6000



CHO cells in Panserin C6000

|                               |                  |                           |
|-------------------------------|------------------|---------------------------|
| Panserin C6000 <sup>(1)</sup> | 100 ml<br>500 ml | P04-716000M<br>P04-716000 |
|-------------------------------|------------------|---------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin 293A

**Panserin 293A** is a complete ready to use medium for the serum-free cultivation of HEK293 cells (Human Embryonic Kidney) in adherent culture.

Composition

Based on DMEM additional trace elements, albumin, cholesterol, soy lipids, vitamins and hormones have been added to the medium.

Suitability

Panserin 293A is a particularly enriched medium optimized for the growth of HEK293 cells in adherent culture. HEK293 is frequently used for the expression of recombinant proteins and the proliferation of adenoviruses. Panserin 293A promotes a rapid attachment of the cells and guarantees high cell growth rates.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin 293A. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

|                              |                  |                           |
|------------------------------|------------------|---------------------------|
| Panserin 293A <sup>(1)</sup> | 100 ml<br>500 ml | P04-710608M<br>P04-710608 |
| Panserin 293S <sup>(1)</sup> | 100 ml<br>500 ml | P04-710609M<br>P04-710609 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Panserin 293S

**Panserin 293S** is a complete ready to use medium for the serum-free cultivation of HEK293 cells (Human Embryonic Kidney) in suspension culture.

Composition

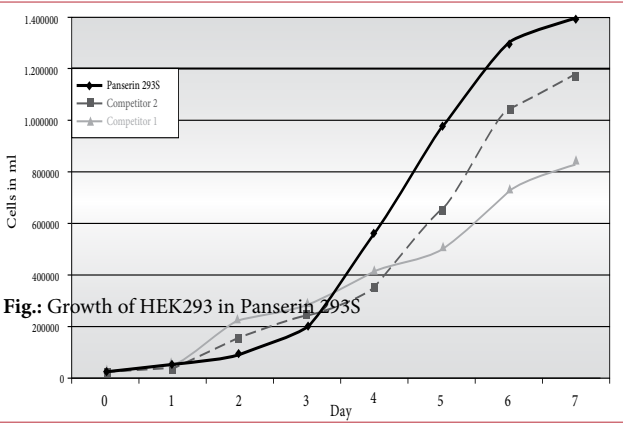
Based on DMEM/F12 medium additional trace elements, cholesterol and herbal hydrolysates have been added. Panserin 293S does not contain any proteins or components of animal or human origin.

Suitability

Panserin 293S is a particularly enriched medium optimized for the growth of HEK293 cells in suspension culture and quickly provides high cell densities. Due to its protein-free formulation the purification of final products (recombinant proteins, viruses) from the cell culture is more convenient and economic. Cell clustering - often seen in serum-free suspension cultures - will be reduced significantly in Panserin 293S.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin 293S. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



Serum-free Media

Panserin T3

**Panserin T3** is a ready-to-use serum-free complete medium for the cultivation of 3T3 cells in suspension culture.

**Composition**

Panserin T3 is a defined serum-free complete medium. Based on Iscove's MEM, this medium was supplemented with cholesterol, soy lipids, albumin, vitamins and trace elements. It contains no growth and attachment factors.

**Suitability**

Panserin T3 was developed for the serum-free cultivation of mouse fibroblasts (3T3A) in suspension.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin T3. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

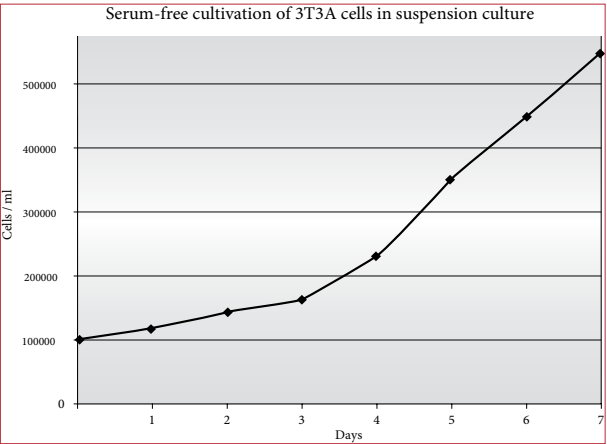


Fig.1: Growth of 3T3A cells in Panserin T3

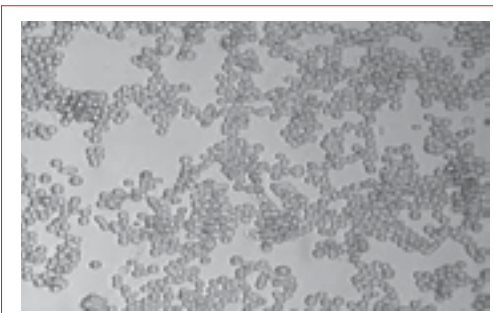


Fig. 2: 3T3A-cells in Panserin T3

|                                 |                  |                           |
|---------------------------------|------------------|---------------------------|
| Panserin T3 <sup>(3)</sup>      | 100 ml<br>500 ml | P04-710110<br>P04-710100  |
| Panserin ProVero <sup>(3)</sup> | 100 ml<br>500 ml | P04-710613M<br>P04-710613 |

Panserin ProVero

**Panserin ProVero** is a complete serum-free medium ready to use for the cultivation of Vero cells (kidney epithelial cells from African green monkey) in an adherent culture.

**Composition**

Panserin ProVero is based on DMEM/F12. It contains trace elements, albumin, cholesterol, soy lipids, vitamins, hormones and attachment factors.

**Suitability**

Cultivation of Vero cells in adherent culture (e.g. roller bottles)

**Special advantages**

Highly enriched medium for the fast growth and culture of adherent Vero cells.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin ProVero. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

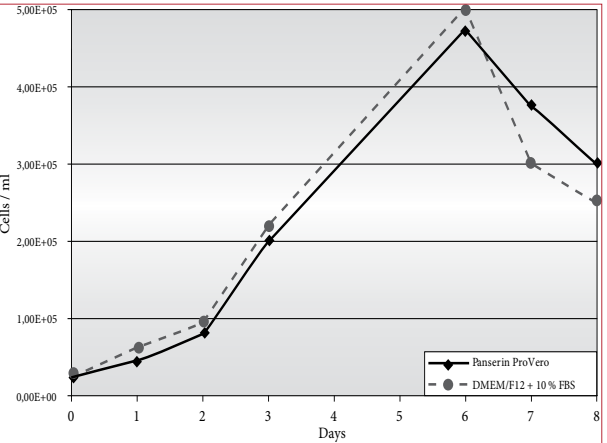


Fig.1: Growth of Vero cells in Panserin ProVero



Fig. 2:Vero-cells in Panserin ProVero

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin 701

**Panserin 701** is a complete ready-to-use serum-free medium for the cultivation of lymphocytes from whole blood.

**Composition**

Based on Iscove's MEM the medium is enriched with additional trace elements, albumin, cholesterol, lipids and vitamins. It contains the mitogen phythemagglutinin (PHA) for a growth stimulation of lymphocytes.

**Suitability**

Panserin 701 has been developed for the serum-free cultivation of lymphocytes from whole blood. The herbal lectin (PHA) in Panserin 701 stimulates cell division.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 701. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

|                             |                  |                           |
|-----------------------------|------------------|---------------------------|
| Panserin 701 <sup>(1)</sup> | 100 ml<br>500 ml | P04-710701M<br>P04-710701 |
| Panserin 801 <sup>(3)</sup> | 500 ml           | P04-710801                |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Panserin 801

**Panserin 801** is a serum-free, ready-to-use medium for the cultivation of human keratinocytes.

**Composition**

MCDB-153 is used as basal medium to which the supplied supplements have to be added just before use.

**These supplements are:**

- Epidermal Growth Factor (EGF)
- Insulin
- Hydrocortisone
- Ethanolamine
- Phosphoethanolamine
- Pituitary Extract (BPE)

**Suitability**

Panserin 801 has been developed for the serum-free cultivation of human keratinocytes. Panserin 801 selectively supports the growth of human keratinocytes and concurrently prevents the overgrowth with fibroblasts.

**Instructions for use**

Detailed instructions will be provided with the accompanying datasheet for Panserin 801. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

Serum-free Media

Panserin PX10

**Panserin PX10** is a ready-to-use serum-free complete medium for the cultivation of myeloma- and hybridoma cells for the production of monoclonal antibodies.

Composition

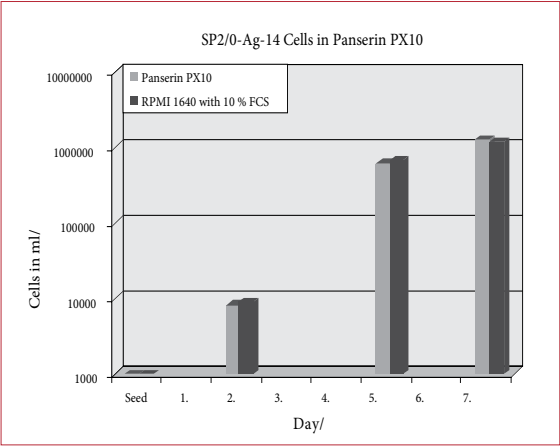
Based on RPMI 1640/DMEM/F-12, trace elements, albumin, cholesterol, soy lipids, vitamins and hormones were added to the medium. The medium does not contain any growth factors.

Suitability

Cultivation of myeloma- and hybridoma cells for the production of monoclonal antibodies.

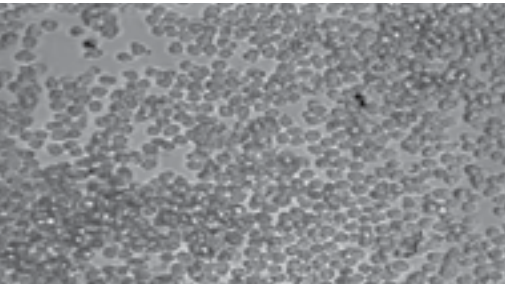
Special advantages

Panserin PX10 is a ready-to-use, serum-free medium for the production of monoclonal antibodies. It contains no undefined peptones or hydrolysates. Due to its optimized composition Panserin PX10 shows significant growth stimulation even at low seeding densities. In addition to an excellent cell growth Panserin PX10 shows very good cloning properties. Conventional serum-free systems often require long and laborious adaptation steps and seeding densities of up to 10<sup>5</sup> cells/ml. In contrast, most clones can be directly transferred into Panserin PX10 culture. With Panserin PX10 clones can be obtained easily.

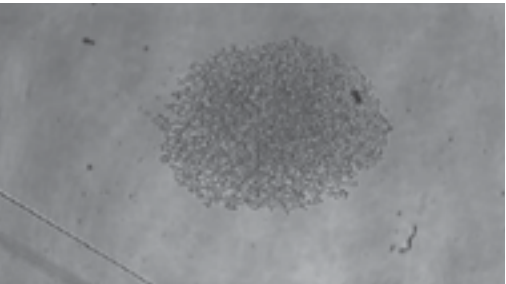


Typical growth curve of SP2/O-Ag-14 in Panserin PX10

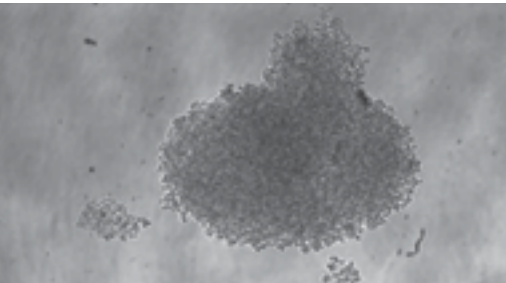
|                              |        |             |
|------------------------------|--------|-------------|
| Panserin PX10 <sup>(1)</sup> | 500 ml | P04-710PX10 |
|------------------------------|--------|-------------|



SP2/O-Ag-14 in Panserin PX10

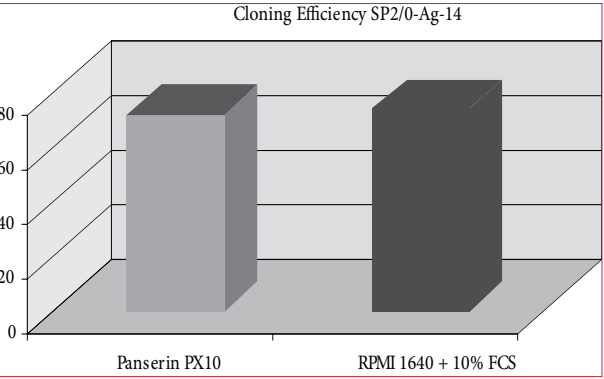


Cloning of SP2/O-Ag-14 in Panserin PX10



Cloning of SP2/O-Ag-14 in RPMI 1640 with 20 % FCS

Sp2/O-Ag-14 cells were transferred from serum containing culture (RPMI 1640 with 10 % FCS) directly into Panserin PX10. Seeding density 1.000 cells/ml. In comparison Sp2/O-Ag-14 in RPMI 1640 with 10 % FCS.



Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin PX10. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin PX40

**Panserin PX40** is a ready-to-use complete medium for the serum-free cultivation of a variety of cells.

Composition

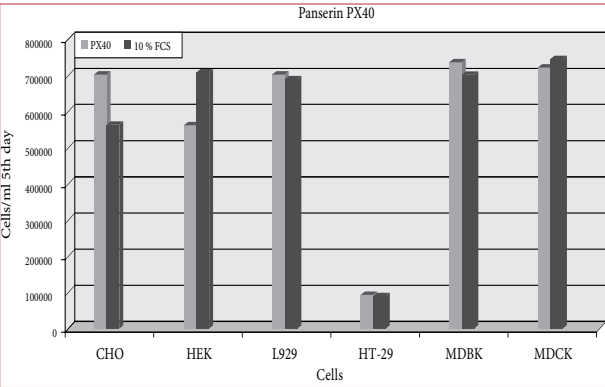
Based on RPMI 1640/DMEM/F-12, trace elements, albumin, lipoproteins, vitamins, hormones and attachment factors were added to the medium. The medium does not contain any growth factors.

Suitability

Cultivation of a variety of adherent cells under serum-free conditions (e. g. HEK, L929, CHO, MDCK, MDBK, 3T3A).

Special advantages

Panserin PX40 is a ready-to-use serum-free medium for the cultivation of a variety of adherent cells. The addition of attachment factors allows the cultivation of even highly demanding cells after a short adaptation phase.



Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin PX40. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

|                              |        |             |
|------------------------------|--------|-------------|
| Panserin PX40 <sup>(1)</sup> | 500 ml | P04-710PX40 |
|------------------------------|--------|-------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Serum-free Media

Spodopan

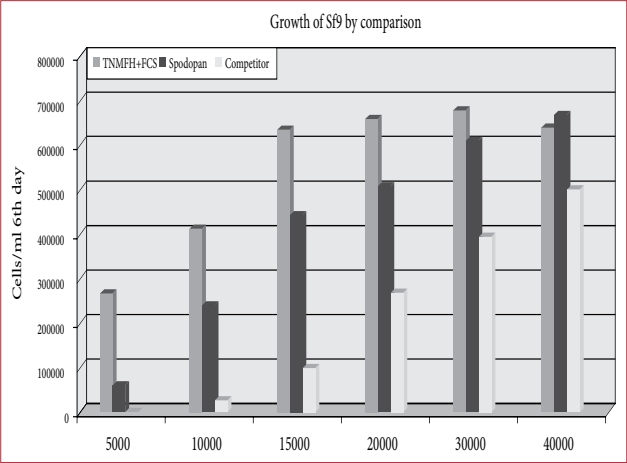
**Spodopan** is a protein-free medium for an optimized growth of insect cells such as Sf9 and Sf21 (Spodoptera frugiperda) in suspension culture. Insect cells are often used for the industrial production of recombinant proteins.

Composition

Spodopan contains amino acids, vitamins, salts, trace elements, lipids and growth promoting factors in a formulation optimized for insect cells. It contains no protein or any other components of human or animal origin.

Suitability

Spodopan is suitable for the cultivation of insect cells and the production of recombinant proteins. (Baculovirus expression vector system, BEVS)

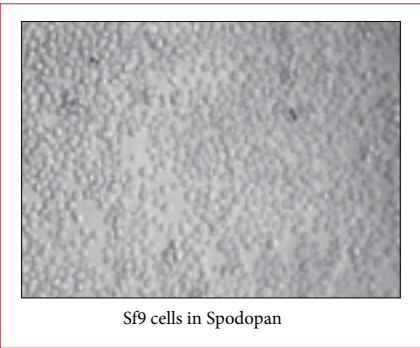


Special advantages

Spodopan with its protein-free formulation is free of human and animal components. This allows the production of recombinant proteins for medical and therapeutic purposes. The protein-free formulation also facilitates an easier and more economic purification of final products from the cell culture. Spodopan guarantees a high cell density with increased production of recombinant proteins (Baculovirus expression vector system).

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Spodopan. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



|                         |        |            |
|-------------------------|--------|------------|
| Spodopan <sup>(1)</sup> | 100 ml | P04-850100 |
|                         | 500 ml | P04-850500 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Serum-free Media

Panserin S2

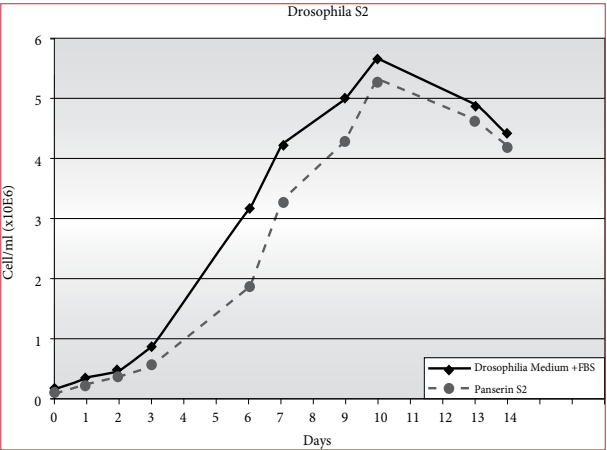
**Panserin S2** is a protein-free medium for an optimized growth of insect Drosophila S2 cells in suspension culture. Insect cells are widely used for the industrial production of recombinant proteins.

Composition

Panserin S2 contains amino acids, vitamins, salts, trace elements, lipids and growth promoting factors in a formulation optimized for the growth of insect cells. It contains no protein or any further components of human or animal origin.

Suitability

Panserin S2 is suitable for the cultivation of Drosophila S2 cells and the production of recombinant protein. (e.g. Baculovirus expression vector system, BEVS)



|                            |        |            |
|----------------------------|--------|------------|
| Panserin S2 <sup>(1)</sup> | 100 ml | P04-710210 |
|                            | 500 ml | P04-710200 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Special advantages

Panserin S2 with its protein-free formulation is free of human and animal components. This allows the production of recombinant proteins for medical and therapeutic purposes. The protein-free formulation also facilitates convenient and economic purification of final products from the cell culture. Panserin S2 guarantees a high cell density and viability resulting in an increased production and easy and economic purification of recombinant protein. (Baculovirus expression vector system)

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Panserin S2. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

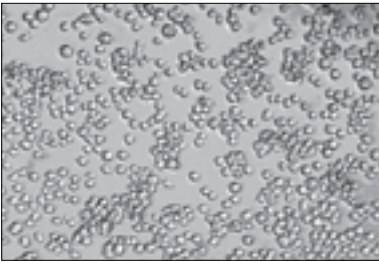


Fig. 1:Drosophila S2-cells in Panserin S2

Serum-free Media

Endopan 300 SL

**Endopan 300 SL** is the first complete medium specially developed for the serum-free in vitro culture of human endothelial cells containing all components necessary for optimal growth.

Endothelial cells line blood and lymphatic vessels and the internal cavities of the heart. They display a strongly flattened, polygonal form and mostly rest on a basal membrane. They adhere to each other by desmosomes and tight-junctions. With a total cell number of about one trillion (10<sup>12</sup>), the endothelium is one of the biggest organs of the body and plays a key role in many physiological and patho-physiological processes (e.g. cell-based immune response, wound healing, inflammation, allergy, cardiovascular diseases, tumour growth). A huge number of soluble factors circulating in the blood or released by neighbouring cells control proliferation or apoptosis of endothelial cells and the invasion and migration of leucocytes to the endothelium, thereby regulating the maintenance, degeneration, or regeneration of blood vessels.

Composition and application

Endopan 300 SL ready-to-use is a complete medium specially developed for serum-free in vitro culture of human endothelial cells and it contains all components necessary for optimal growth. It is designed for use in an incubator at 37° C with a 5% CO2 atmosphere. Endopan 300 SL kit is provided with a serum substitute (Panexin SL-S) and supplements in separate sterile packing.

Endopan 300 SL has been designed for serum-free culture of endothelial cells directly after isolation. This exclusive medium is optimized for the maintenance and expansion of endothelial cells under serum-free culture conditions. HUVEC cultured in Endopan 300 SL exhibit a typical endothelial morphology and express endothelial specific markers such as CD31 or von Willebrand Factor and bind UEA-1 lectin. Additionally, HUVEC in Endopan 300 SL have been shown to maintain endothelial cell signal transduction pathways. When using complete Endopan 300 SL the growth rate of HUVEC is similar to that obtained for cells cultured in endothelial growth media containing bovine serum and supplements.

Although not extensively tested, it has been shown that Endopan 300 SL can also be used with endothelial cells of bovine, pig, rat, and rabbit origin.

|  |        |           |
|--|--------|-----------|
| Endopan 300 SL ready-to-use <sup>(3)</sup> | 500 ml | P04-00650 |
| Endopan 300 SL kit <sup>(3)</sup>          | 500 ml | P04-0065K |

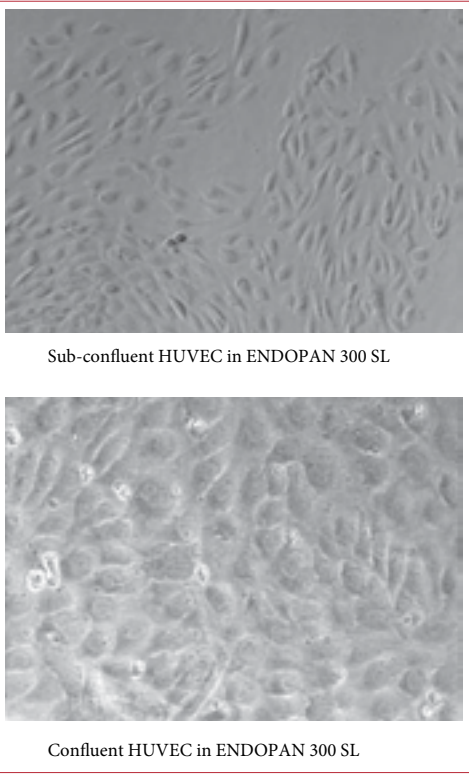
Special advantages

Endothelial cell biology has been greatly advanced by studying cultured vascular endothelial cells in vitro. Traditionally, complete endothelial growth media contain animal serum. The advance of so-called low-serum media for endothelial cells has improved the quality of experimental data acquired in recent years. However, endothelial cells may synthesize substances which can not be detected due to their low quantity or masking effects from serum.

In the past, cellular signalling pathways in endothelial cells have not been decipherable experimentally because even low concentrations of serum present in traditional media induce an undefined and undesired stimulation of cell surface receptors or intracellular signalling which only may become evident under serum-free conditions. As endothelial cells move into the field of interest for vascular tissue engineering with potential therapeutic application, the presence of whole animal serum is undesirable for such applications.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for Endopan 300 SL. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



(1) usually on stock, (2) minimum order 10 l, (3) available upon request

# Media

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# Introduction

## You only want highest quality media for cell cultivation?

At PAN-Biotech, perfect raw materials combined with state-of-the-art technologies guarantee a first-class quality of our media.

Water is the most important component of liquid media, which is why water purity is of outstanding importance for the quality of media. The water we use generally has a very low endotoxin level of < 0.005 EU/ml, and therefore is of highest purity.

Our media are placed in quarantine until quality control procedures are finished. This guarantees an excellent quality of the final product.

## Advantages of our cell culture media

- Raw materials used are tested according to the highest possible quality standards
- Standard filling in sterile, high-class PET bottles
- Batches of 10 litre up to 4000 litre
- Custom service of product optimisation and further development for specific applications and purposes
- CE-label according to medical product law available upon request

## Other sizes and custom formulation

Almost all media available from PAN-Biotech can be filled in special containers as per customer requirement. Besides standard bottles in 100, 500, and 1000 ml, medium can be filled in cans (up to 10 L), bags (up to 500 L), or other containers with fittings according to customer specifications for special applications such as continuous feed process or production purposes.

## Delivery time

Standard media:

In principle within 3 working days in Germany; otherwise we will inform you.

Special media and custom products:

Within Germany in 4 to 6 weeks after receipt of order.

## Shelf life

|                                    |         |
|------------------------------------|---------|
| Powder media                       | 2 years |
| Liquid media without Glutamine     | 2 years |
| Liquid media with stable Glutamine | 2 years |
| Liquid media with L-Glutamine      | 1 year  |

Liquid media with L-Glutamine can be used also after the expiry date, but have to be supplemented with new L-Glutamine in this case. Shelf life starts on date of production!

## Storage

|              |                               |
|--------------|-------------------------------|
| Powder media | 2 – 8° C                      |
| Liquid media | 2 – 8° C protected from light |

Benefit from the experience and know-how of PAN-Biotech. Our state-of-the-art production facilities, with a production line specifically installed for these requirements, allow us to produce the formulations especially developed for your needs in constant high quality also for longer periods of time, and to make batch sizes adapted to your need. Our team of scientists will be pleased to advise you regarding your proprietary formulation.

For further information regarding the dependency of pH-values in media on the CO<sub>2</sub> concentration in the incubator please refer to our website at [www.pan-biotech.com](http://www.pan-biotech.com).



Alpha MEM

**Description**  
Alpha MEM is a different formulation of MEM Eagle and contains a higher concentration of amino acids. It also has a higher concentration of lipoic acid, vitamins and pyruvate. Primarily it was developed for the cultivation of hamster kidney cells, but today it is used for a broad range of mammalian cells. Among others the alpha MEM promotes the growth and progeny of bone marrow cells in suspension culture and monolayer. A further possibility is the use as a separation medium or for the out-breeding of amniotic cells.

Liquid Media

Alpha MEM Eagle<sup>(1)</sup>  
without L-Glutamine  
without Ribonucleosides  
without Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21050

Alpha MEM Eagle<sup>(1)</sup>  
with L-Glutamine  
with Ribonucleosides  
with Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21500

Alpha MEM Eagle<sup>(1)</sup>  
with stab. Glutamin  
with Ribonucleosides  
with Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21250

Special Media

Alpha MEM Eagle<sup>(2)</sup>  
without L-Glutamine  
with Ribonucleosides  
with Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21150

Alpha MEM Eagle<sup>(2)</sup>  
with L-Glutamine  
without Ribonucleosides  
without Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21060

Alpha MEM Eagle<sup>(2)</sup>  
with stab. Glutamine  
without Ribonucleosids  
without Deoxyribonucleosids  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21350

Alpha MEM Eagle<sup>(2)</sup>  
with L-Glutamine  
without Glucose  
with Ribonucleosides  
with Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21502

Alpha MEM Eagle<sup>(2)</sup>  
without Glutamine  
without Phenol red  
without Ribonucleosides  
without Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-21051

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Alpha MEM

Powder Media

Alpha MEM Eagle<sup>(1)</sup>                      10 L    P03-2410  
without L-Glutamine                      50 L    P03-2450  
with Ribonucleosides  
with Deoxyribonucleosides  
without NaHCO<sub>3</sub>

Alpha MEM Eagle<sup>(1)</sup>                      10 L    P03-2510  
with L-Glutamine                      50 L    P03-2550  
with Ribonucleosides  
with Deoxyribonucleosides  
without NaHCO<sub>3</sub>

Alpha MEM Eagle<sup>(1)</sup>                      10 L    P03-2310  
with L-Glutamine                      50 L    P03-2350  
without Ribonucleosides  
without Deoxyribonucleosides  
with 2.2 g/L NaHCO<sub>3</sub>

Alpha MEM Eagle<sup>(1)</sup>                      10 L    P03-2610  
with L-Glutamine                      50 L    P03-2650  
with 25 mM Hepes  
with Ribonucleosides  
with Deoxyribonucleosides  
without NaHCO<sub>3</sub>

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Composition

|                          | Components                                     | mg/L     |
|--------------------------|--|----------|
| Inorganic Salts          | Calcium chloride x 2H <sub>2</sub> O           | 264.92   |
|                          | Magnesium sulfate dried                        | 139.52   |
|                          | Potassium chloride                             | 400.00   |
|                          | Sodium chloride                                | 6,800.00 |
|                          | Sodium dihydrogen phosphate x H <sub>2</sub> O | 140.00   |
| Other Components         | D(+)-Glucose anhydrous                         | 1,000.00 |
|                          | Hepes  | 5,958.00 |
|                          | Lipoic acid                                    | 0.20     |
|                          | Phenol red                                     | 10.00    |
|                          | Sodium pyruvate                                | 110.00   |
| Amino Acids              | L-Alanine                                      | 25.00    |
|                          | L-Arginine x HCl                               | 126.64   |
|                          | L-Asparagine x H <sub>2</sub> O                | 50.00    |
|                          | L-Aspartic acid                                | 30.00    |
|                          | L-Cysteine x HCl x H <sub>2</sub> O            | 100.00   |
|                          | L-Cystine                                      | 24.00    |
|                          | L-Glutamine                                    | 292.00   |
|                          | L-Glutamic acid                                | 75.00    |
|                          | Glycine  | 50.00    |
|                          | L-Histidine x HCl x H <sub>2</sub> O           | 42.00    |
|                          | L-Isoleucine                                   | 52.40    |
|                          | L-Leucine                                      | 52.40    |
|                          | L-Lysine x HCl                                 | 72.47    |
|                          | L-Methionine                                   | 15.00    |
|                          | L-Phenylalanine                                | 32.00    |
|                          | L-Proline                                      | 40.00    |
|                          | L-Serine                                       | 25.00    |
|                          | L-Threonine                                    | 48.00    |
|                          | L-Tryptophan                                   | 10.00    |
|                          | L-Tyrosine                                     | 36.20    |
|                          | L-Valine                                       | 46.00    |
| Vitamins                 | L-Ascorbic acid                                | 50.00    |
|                          | D(+)-Biotin                                    | 0.10     |
|                          | D-Calcium pantothenate                         | 1.00     |
|                          | Choline chloride                               | 1.00     |
|                          | Folic acid                                     | 1.00     |
|                          | myo-Inositol                                   | 2.00     |
|                          | Nicotinamide                                   | 1.00     |
|                          | Pyridoxal x HCl                                | 1.00     |
|                          | Riboflavin                                     | 0.10     |
|                          | Thiamine x HCl                                 | 1.00     |
|                          | Vitamine B12                                   | 1.33     |
| Ribonu- cleosides        | Adenosine                                      | 10.00    |
|                          | Cytidine                                       | 10.00    |
|                          | Guanosine                                      | 10.00    |
|                          | Uridine  | 10.00    |
| Deoxy- ribonu- cleosides | 2'-Deoxyadenosine x H <sub>2</sub> O           | 10.00    |
|                          | 2'-Deoxycytidine x HCl                         | 11.00    |
|                          | 2'-Deoxyguanosine                              | 10.00    |
|                          | 2'-Deoxythymidine                              | 10.00    |

BME with Hank’s Salts

**Description**  
In the fifties of the last century it was found that mammalian cells do not only need the 10 essential amino acids, but also cystine, tyrosine and glutamine. In addition to these three amino acids BME includes

| Composition      |  |          |
|------------------|--|----------|
|                  | Components                               | mg/L     |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O     | 185.44   |
|                  | Magnesium sulfate dried                  | 139.52   |
|                  | Potassium chloride                       | 400.00   |
|                  | Potassium dihydrogen phosphate anhydrous | 60.00    |
|                  | Sodium chloride                          | 8,000.00 |
|                  | di-Sodium hydrogen phosphate             | 47.88    |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                   | 1,000.00 |
|                  | Hepes                                    | 5,958.00 |
|                  | Phenol red                               | 10.00    |
|                  |  |          |
| Amino Acids      | L-Arginine x HCl                         | 21.00    |
|                  | L-Cystine                                | 12.00    |
|                  | L-Glutamine                              | 292.00   |
|                  | L-Histidine Base                         | 8.00     |
|                  | L-Isoleucine                             | 26.00    |
|                  | L-Leucine                                | 26.00    |
|                  | L-Lysine x HCl                           | 36.47    |
|                  | L-Methionine                             | 7.50     |
|                  | L-Phenylalanine                          | 16.50    |
|                  | L-Threonine                              | 24.00    |
|                  | L-Tryptophan                             | 4.00     |
|                  | L-Tyrosine                               | 18.00    |
|                  | L-Valine                                 | 23.50    |
|                  |  |          |
| Vitamins         | D(+)-Biotin                              | 1.00     |
|                  | D-Calcium pantothenate                   | 1.00     |
|                  | Choline chloride                         | 1.00     |
|                  | Folic acid                               | 1.00     |
|                  | myo-Inositol                             | 2.00     |
|                  | Nicotinamide                             | 1.00     |
|                  | Pyridoxal x HCl                          | 1.00     |
|                  | Riboflavin                               | 0.10     |
|                  | Thiamine x HCl                           | 1.00     |

When 5,958.00 mg/L HEPES is included there is only 7,500.00 mg/L sodium chloride.

Liquid Media

BME with HBSS<sup>(1)</sup>  
without L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-26050

BME with Earle’s Salts

also eight B-vitamins. Originally BME was used for the cultivation of murine L-cells and HeLa cells. With its many variations it is used in many fields of science today. Along with the cultivation of normal mammalian cells BME is very suitable for transformed cells.

| Composition      |  |          |
|------------------|--|----------|
|                  | Components                                     | mg/L     |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O           | 264.92   |
|                  | Magnesium sulfate dried                        | 139.52   |
|                  | Potassium chloride                             | 400.00   |
|                  | Sodium chloride                                | 6,800.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 140.00   |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                         | 1,000.00 |
|                  | Hepes  | 5,958.00 |
|                  | Phenol red                                     | 10.00    |
| Amino Acids      | L-Arginine x HCl                               | 21.00    |
|                  | L-Cystine                                      | 12.00    |
|                  | L-Glutamine                                    | 292.00   |
|                  | L-Histidine Base                               | 8.00     |
|                  | L-Isoleucine                                   | 26.00    |
|                  | L-Leucine                                      | 26.00    |
|                  | L-Lysine x HCl                                 | 36.47    |
|                  | L-Methionine                                   | 7.50     |
|                  | L-Phenylalanine                                | 16.50    |
|                  | L-Threonine                                    | 24.00    |
|                  | L-Tryptophan                                   | 4.00     |
|                  | L-Tyrosine                                     | 18.00    |
|                  | L-Valine                                       | 23.50    |
| Vitamins         | D(+)-Biotin                                    | 1.00     |
|                  | D-Calcium pantothenate                         | 1.00     |
|                  | Choline chloride                               | 1.00     |
|                  | Folic acid                                     | 1.00     |
|                  | myo-Inositol                                   | 2.00     |
|                  | Nicotinamide                                   | 1.00     |
|                  | Pyridoxal x HCl                                | 1.00     |
|                  | Riboflavin                                     | 0.10     |
|                  | Thiamine x HCl                                 | 1.00     |

When 5,958.00 mg/L HEPES is included there is only 6,300.00 mg/L sodium chloride.

Liquid Media

BME with EBSS<sup>(1)</sup>  
without L-Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-25050

Special Media

BME with EBSS<sup>(2)</sup>  
with L-Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-25500

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



CMRL-1066 Medium

**Description**  
The CMRL is a nucleosid- and vitamin-rich medium. In the past it was developed to clone monkey-kidney cells and as long time culture medium for L-cells. It is suitable for many types of human and monkey cells and also for other mammalian cells, especially by using horse and calf serum.

Liquid Media

CMRL – 1066<sup>(1)</sup>  
without L-Glutamine  
without Phenol red  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-84600

Special Media

CMRL – 1066<sup>(2)</sup>  
with L-Glutamine  
without Phenol red  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-84500

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Composition

|                       | Components                                      | mg/L     |
|-----------------------|---|----------|
| Inorganic Salts       | Calcium chloride x 2H <sub>2</sub> O            | 264.92   |
|                       | Potassium chloride                              | 400.00   |
|                       | Magnesium sulfate dried                         | 139.55   |
|                       | Sodium acetate anhydrous                        | 50.00    |
|                       | Sodium chloride                                 | 6,799.00 |
|                       | di-Sodium hydrogen phosphate x H <sub>2</sub> O | 139.75   |
|                       |   |          |
| Other Components      | Cholesterol                                     | 0.20     |
|                       | D(+)-Glucose anhydrous                          | 1,000.00 |
|                       | Glutathione (red.)                              | 10.00    |
|                       | Sodium glucuronate x H <sub>2</sub> O           | 4.00     |
|                       | Tween 80  | 5.00     |
| Coenzyme              | Cocarcboxylase x HCl                            | 1.00     |
|                       | Coenzyme A Trilithiumsalt x 2H <sub>2</sub> O   | 2.60     |
|                       | NAD   | 7.00     |
|                       | NADP sodium salt                                | 1.00     |
|                       | UTP   | 1.00     |
| Amino Acids           | L-Alanine                                       | 25.00    |
|                       | L-Arginine x HCl                                | 70.00    |
|                       | L-Aspartic acid                                 | 30.00    |
|                       | L-Cysteine x HCl x H <sub>2</sub> O             | 260.00   |
|                       | L-Cystine                                       | 20.00    |
|                       | L-Glutamine                                     | 100.00   |
|                       | L-Glutamic acid                                 | 75.00    |
|                       | Glycine   | 50.00    |
|                       | L-Histidine x HCl x H <sub>2</sub> O            | 20.00    |
|                       | L-Hydroxyproline                                | 10.00    |
|                       | L-Isoleucine                                    | 20.00    |
|                       | L-Leucine                                       | 60.00    |
|                       | L-Lysine x HCl                                  | 70.00    |
|                       | L-Methionine                                    | 15.00    |
|                       | L-Phenylalanine                                 | 25.00    |
|                       | L-Proline                                       | 40.00    |
|                       | L-Serine  | 25.00    |
|                       | L-Threonine                                     | 30.00    |
|                       | L-Tryptophan                                    | 10.00    |
|                       | L-Tyrosine                                      | 40.00    |
|                       | L-Valine  | 25.00    |
| Vitamins              | L-Ascorbic acid                                 | 50.00    |
|                       | D(+)-Biotin                                     | 0.10     |
|                       | D-Calcium pantothenate                          | 1.00     |
|                       | Choline chloride                                | 1.00     |
|                       | Folic acid                                      | 1.00     |
|                       | myo-Inositol                                    | 2.00     |
|                       | Nicotinamide                                    | 1.00     |
|                       | Pyridoxal x HCl                                 | 1.00     |
|                       | Riboflavin                                      | 0.10     |
|                       | Thiamine x HCl                                  | 1.00     |
|                       | Vitamine B12                                    | 1.33     |
|                       |   |          |
|                       |   |          |
| Deoxy-ribonucleosides | 2'-Deoxyadenosine x H <sub>2</sub> O            | 10.00    |
|                       | 2'-Deoxycytidine x HCl                          | 11.00    |
|                       | 2'-Deoxyguanosine                               | 10.00    |
|                       | 2'-Deoxythymidine                               | 10.00    |

Dulbecco’s Modified Eagle Medium

**Description**  
Intrinsically developed for the cultivation of murine embryonic cells, DMEM is tailor-made for the cultivation of a broad range of cells, especially if the medium is supplemented with FBS. DMEM is an Eagle medium modification with a four-fold content of amino acids and vitamins. DMEM with 1.0 g/L Glucose is the standard medium, whereas DMEM with 4.5 g/L Glucose is for cells which have a high energy demand.

Liquid Media without Glucose

DMEM without Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01548S1

DMEM without Glucose<sup>(1)</sup>  
without L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01549

DMEM without Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01548

Special Media without Glucose

DMEM without Glucose<sup>(2)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01551

Powder Media without Glucose

DMEM without Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate  
without Phenol red      10 L      P03-0010  
without NaHCO<sub>3</sub>          50 L      P03-0050

Liquid Media with 1.0 g/L Glucose

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
without L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01500

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01550

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with stab. Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-02500

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01515

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 25 mM Hepes  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-05551

Powder Media with 1.0 g/L Glucose

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate      10 L      P03-0510  
with 3.7 g/L NaHCO<sub>3</sub>      50 L      P03-0550

DMEM with 1.0 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
without Phenol red      10 L      P03-01510  
with 3.7 g/L NaHCO<sub>3</sub>      50 L      P03-01550

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Dulbecco’s Modified Eagle Medium

Special Media with 1.0 g/L Glucose

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
without L-Glutamine  
with Sodium pyruvate  
**without Calcium**  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01501

SILAC-DMEM<sup>(2)</sup>  
with 1.0 g/L Glucose  
with stab. Glutamine  
with Sodium pyruvate  
**without L-Arginin**  
**without L-Lysin**  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-02501

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
without L-Glutamine  
without Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03556

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
without L-Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01159

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
with stab. Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-02500S1

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
with L-Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01516

DMEM with 1.0 g/L Glucose<sup>(2)</sup>  
with L-Glutamine  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01555

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Liquid Media with 4.5 g/L Glucose

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03500

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
without L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03600

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03550

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03590

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 1.5 g/L NaHCO<sub>3</sub>      500 ml    P04-03596

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with stab. Glutamine  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-04500

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with stab. Glutamine  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-04510

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01161

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
without Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-01158

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml    P04-03591



Dulbecco’s Modified Eagle Medium

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with 25 mM Hepes  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-05540

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with 25 mM Hepes  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-05550

Special Media with 4.5 g/L Glucose

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with stab. L-Glutamine  
with 25 mM Hepes  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-04550

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with L-Glutamin  
without Sodium pyruvate  
with 25 mM Hepes  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-05545

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with stab. Glutamine  
with Sodium pyruvate  
without Phenol red  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-03588

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
without L-Glutamine  
with 25 mM Hepes  
with Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-01597

DMEM (10 x)<sup>(3)</sup>  
with 4.5 g/L Glucose  
without L-Glutamine  
without Sodium pyruvate  
with NEAA  
without NaHCO<sub>3</sub>              500 ml   P04-03510

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
without L-Glutamine  
with Sodium pyruvate  
without L-Arginine  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-03598

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with L-Glutamine  
with 25 mM Hepes  
without Sodium pyruvate  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml   P04-04057

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with L-Glutamine  
without Sodium pyruvate  
without Sodium chloride  
without NaHCO<sub>3</sub>              500 ml   P04-03560

DMEM with 5.5 g/L Glucose<sup>(2)</sup>  
with L-Glutmamin  
without Sodium pyruvate  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-03551

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with stab. Glutamine  
with Sodium pyruvate  
with 25 mM Hepes  
without Phenol red  
with 0.5 g/L NaHCO<sub>3</sub>      500 ml   P04-01163

DMEM with 4.5 g/L Glucose<sup>(2)</sup>  
with L-Glutamine  
without Sodium pyruvate  
without Isoleucine  
with 3.7 g/L NaHCO<sub>3</sub>      500 ml   P04-03503

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Dulbecco’s Modified Eagle Medium

Powder Media with 4.5 g/L Glucose

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
without L-Glutamine  
without Sodium pyruvate   10 L      P03-6510  
without NaHCO<sub>3</sub>              50 L      P03-6550

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
without Sodium pyruvate   10 L      P03-0710  
without NaHCO<sub>3</sub>              50 L      P03-0750

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate      10 L      P03-0810  
without NaHCO<sub>3</sub>              50 L      P03-0850

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
without Sodium pyruvate  
with 25 mM Hepes          10 L      P03-0910  
without NaHCO<sub>3</sub>              50 L      P03-0950

DMEM with 4.5 g/L Glucose<sup>(1)</sup>  
with L-Glutamine  
with Sodium pyruvate  
with 25 mM Hepes          10 L      P03-1010  
without NaHCO<sub>3</sub>              50 L      P03-1050

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



| Composition      |                                       |          |
|------------------|---------------------------------------|----------|
|                  | Components                            | mg/L     |
| Inorganic Salts  | Calcium chloride anhydrous            | 200.00   |
|                  | Iron(III) nitrate x 9H <sub>2</sub> O | 0.10     |
|                  | Magnesium sulfate anhydrous           | 97.66    |
|                  | Potassium chloride                    | 400.00   |
|                  | Sodium chloride                       | 6,400.00 |
|                  | Sodium dihydrogen phosphate anhydrous | 108.69   |
| Other Components | D(+)-Glucose anhydrous                | 4,500.00 |
|                  | Hepes                                 | 5,958.00 |
|                  | Phenol red                            | 15.00    |
|                  | Sodium pyruvate                       | 110.00   |
| Amino Acids      | L-Arginine x HCl                      | 84.00    |
|                  | L-Cystine x 2HCl                      | 62.58    |
|                  | L-Glutamine                           | 584.00   |
|                  | Glycine                               | 30.00    |
|                  | L-Histidine x HCl x H <sub>2</sub> O  | 42.00    |
|                  | L-Isoleucine                          | 104.80   |
|                  | L-Leucine                             | 104.80   |
|                  | L-Lysine x HCl                        | 146.20   |
|                  | L-Methionine                          | 30.00    |
|                  | L-Phenylalanine                       | 66.00    |
|                  | L-Serine                              | 42.00    |
|                  | L-Threonine                           | 95.20    |
|                  | L-Tryptophan                          | 16.00    |
|                  | L-Tyrosine x 2Na                      | 103.79   |
|                  | L-Valine                              | 93.60    |
| Vitamins         | D-Calcium pantothenate                | 4.00     |
|                  | Choline chloride                      | 4.00     |
|                  | Folic acid                            | 4.00     |
|                  | myo-Inositol                          | 7.00     |
|                  | Nicotinamide                          | 4.00     |
|                  | Pyridoxine x HCl                      | 4.00     |
|                  | Riboflavin                            | 0.40     |
|                  | Thiamine x HCl                        | 4.00     |
|                  |                                       |          |

When 5,957.50 mg/L HEPES is included there is only 5,400.00 mg/L sodium chloride.

DMEM/F12

**Description**  
This medium supports the growth of almost all cell lines. For example, it is used for pancreas cells, Sertoli cells or to culture cells, which are used for human protein production. It combines the advantages of both media DMEM (high concentration of amino acids and vitamins) and Ham's F12 (higher concentration of zinc sulphate, putrescine and linoleic acid).

| Composition      |  |          |
|------------------|--|----------|
|                  | Components                             | mg/L     |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O   | 154.45   |
|                  | Iron(III)-nitrate x 9H <sub>2</sub> O  | 0.05     |
|                  | Iron(II)-sulfate x 7H <sub>2</sub> O   | 0.42     |
|                  | Potassium chloride                     | 311.83   |
|                  | Copper(II)-sulfate x 5H <sub>2</sub> O | 0.001    |
|                  | Magnesium chloride                     | 28.57    |
|                  | Magnesium sulfate                      | 48.85    |
|                  | Sodium chloride                        | 6,999.50 |
|                  | Sodium dihydrogen phosphate            | 54.35    |
|                  | di-Sodium hydrogen phosphate           | 70.98    |
|                  | Zinc sulfate x 7H <sub>2</sub> O       | 0.43     |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                 | 3,151.0  |
|                  | Hypoxanthine                           | 2.04     |
|                  | Linoleic acid                          | 0.04     |
|                  | DL-68-Lipoic acid                      | 0.103    |
|                  | Sodium pyruvate                        | 110.00   |
|                  | Phenol red                             | 8.10     |
|                  | Putrescin x 2HCl                       | 0.081    |
|                  | Thymidine                              | 0.36     |
| Amino Acids      | L-Alanine                              | 4.45     |
|                  | L-Arginine x HCl                       | 147.35   |
|                  | L-Asparagine x H <sub>2</sub> O        | 7.50     |
|                  | L-Aspartic acid                        | 6.65     |
|                  | L-Cystine x 2HCl                       | 31.29    |
|                  | L-Cysteine x HCl x H <sub>2</sub> O    | 17.56    |
|                  | L-Glutamine                            | 365.00   |
|                  | L-Glutamic acid                        | 7.35     |
|                  | Glycine                                | 18.75    |
|                  | L-Histidine x HCl x H <sub>2</sub> O   | 31.48    |
|                  | L-Isoleucine                           | 54.37    |
|                  | L-Leucine                              | 58.96    |
|                  | L-Lysine x HCl                         | 91.37    |
|                  | L-Methionine                           | 17.24    |
|                  | L-Phenylalanine                        | 35.48    |
|                  | L-Proline                              | 17.27    |
|                  | L-Serine                               | 26.25    |
|                  | L-Threonine                            | 53.55    |
|                  | L-Tryptophan                           | 9.02     |
|                  | L-Tyrosine x 2Na x 2H <sub>2</sub> O   | 55.81    |
|                  | L-Valine                               | 53.00    |
| Vitamins         | D-(+)-Biotine                          | 0.004    |
|                  | D-Calcium pantothenate                 | 2.12     |
|                  | Cholin chloride                        | 8.98     |
|                  | Folic acid                             | 2.66     |
|                  | myo-Inositol                           | 12.51    |
|                  | Nicotinamide                           | 2.02     |
|                  | Pyridoxine x HCl                       | 2.03     |
|                  | Riboflavin                             | 0.22     |
|                  | Thiamine x HCl                         | 2.17     |
|                  | Vitamine B12                           | 0.68     |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



DMEM/F12

| Liquid Media   |                  | Powder Media   |                                |
|--|------------------|--|--------------------------------|
| DMEM/F12 (1:1) <sup>(1)</sup> without L-Glutamine with 1.2 g/L NaHCO <sub>3</sub>  | 500 ml P04-41450 | DMEM/F12 (1:1) <sup>(1)</sup> without L-Glutamine without NaHCO <sub>3</sub>               | 10 L P03-6010<br>50 L P03-6050 |
| DMEM/F12 (1:1) <sup>(1)</sup> with L-Glutamine with 1.2 g/L NaHCO <sub>3</sub>   | 500 ml P04-41500 | DMEM/F12 (1:1) <sup>(1)</sup> with L-Glutamine without NaHCO <sub>3</sub>                  | 10 L P03-1110<br>50 L P03-1150 |
| DMEM/F12 (1:1) <sup>(1)</sup> with stab. Glutamine with 1.2 g/L NaHCO <sub>3</sub>   | 500 ml P04-41150 | DMEM/F12 (1:1) <sup>(1)</sup> with L-Glutamine with 15 mM Hepes without NaHCO <sub>3</sub> | 10 L P03-6110<br>50 L P03-6150 |
| DMEM/F12 (1:1) <sup>(1)</sup> without L-Glutamine with 15 mM Hepes with 1.2 g/L NaHCO <sub>3</sub>                           | 500 ml P04-41550 | DMEM/F12 (1:1) <sup>(1)</sup> with L-Glutamine with 25 mM Hepes without NaHCO <sub>3</sub> | 10 L P03-1210<br>50 L P03-1250 |
| DMEM/F12 (1:1) <sup>(1)</sup> with L-Glutamine with 15 mM Hepes with 1.2 g/L NaHCO <sub>3</sub>                              | 500 ml P04-41250 |  |                                |
| Special Media  |                  |  |                                |
| DMEM/F12 (1:1) <sup>(2)</sup> without L-Glutamine without Glucose with 1.2 g/L NaHCO <sub>3</sub>                            | 500 ml P04-41151 |  |                                |
| DMEM/F12 (1:1) <sup>(2)</sup> with L-Glutamine with 25 mM Hepes with 1.2 g/L NaHCO <sub>3</sub>                              | 500 ml P04-41252 |  |                                |
| DMEM/F12 (1:1) <sup>(2)</sup> with L-Glutamine without Phenol red with 1.2 g/L NaHCO <sub>3</sub>                            | 500 ml P04-41650 |  |                                |
| DMEM/F12 (1:1) <sup>(2)</sup> with stab. Glutamine with 15 mM Hepes without Calcium chloride with 1.2 g/L NaHCO <sub>3</sub> | 500 ml P04-41251 |  |                                |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Glasgow MEM (BHK 21)

**Description**  
The GMEM was developed as a modification of BME to culture primary baby hamster kidney cells. This version has twice the concentration of vitamins and amino acids.

Liquid Media

Glasgow-MEM (BHK 21)<sup>(1)</sup>  
without L-Glutamine  
without Tryptose phosphate  
with 2.75 g/L NaHCO<sub>3</sub> 500 ml P04-97500

Glasgow-MEM (BHK 21)<sup>(1)</sup>  
with L-Glutamine  
with Tryptose phosphate  
with 2.75 g/L NaHCO<sub>3</sub> 500 ml P04-96500

Special Media

Glasgow-MEM (BHK 21)<sup>(2)</sup>  
without L-Glutamine  
with Tryptose phosphate  
with 2.75 g/L NaHCO<sub>3</sub> 500 ml P04-98500

Powder Media

Glasgow-MEM (BHK 21)<sup>(1)</sup>  
without L-Glutamine  
without Tryptose phosphate  
without NaHCO<sub>3</sub> 10 L P03-3110  
50 L P03-3150

Glasgow-MEM (BHK 21)<sup>(1)</sup>  
with L-Glutamine  
with Tryptose phosphate  
without NaHCO<sub>3</sub> 10 L P03-6910  
50 L P03-6950

Glasgow-MEM (BHK 21)<sup>(1)</sup>  
with L-Glutamine  
without Tryptose phosphate  
without NaHCO<sub>3</sub> 10 L P03-6810  
50 L P03-6850

Composition

|                               | Components  | w/o<br>Tryptose<br>Phosph-<br>ate mg/L | with<br>Trytose<br>Phosph-<br>ate mg/L |
|-------------------------------|---|--|--|
| Inor-<br>ganic<br>Salts       | Calcium chloride x 2H <sub>2</sub> O              | 264.92                                 | 238.43                                 |
|                               | Iron(III) nitrate x 9H <sub>2</sub> O             | 0.10                                   | 0.09                                   |
|                               | Magnesium sulfate dried                           | 139.57                                 | 125.64                                 |
|                               | Potassium chloride                                | 400.00                                 | 360.00                                 |
|                               | Sodium chloride                                   | 6,400.00                               | 6,260.00                               |
|                               | di-Sodium hydrogen<br>phosphate                   | 0.00                                   | 250.00                                 |
| Other<br>Com-<br>po-<br>nents | Sodium dihydrogen<br>phosphate x H <sub>2</sub> O | 124.00                                 | 111.60                                 |
|                               | D(+)-Glucose anhydrous                            | 4,500.00                               | 4,250.00                               |
|                               | Phenol red  | 15.00                                  | 13.50                                  |
|                               | Pepton from Casein                                | 0.00                                   | 1,000.00                               |
|                               | Pepton from meat                                  | 0.00                                   | 500.00                                 |
|                               | Yeast extract                                     | 0.00                                   | 500.00                                 |
| Amino<br>no<br>Acids          | L-Arginine x HCl                                  | 42.00                                  | 37.80                                  |
|                               | L-Cystine   | 24.00                                  | 21.60                                  |
|                               | L-Glutamine                                       | 292.00                                 | 262.80                                 |
|                               | L-Histidine x HCl x H <sub>2</sub> O              | 21.00                                  | 18.90                                  |
|                               | L-Isoleucine                                      | 52.40                                  | 47.16                                  |
|                               | L-Leucine   | 52.40                                  | 47.16                                  |
|                               | L-Lysine x HCl                                    | 73.10                                  | 65.79                                  |
|                               | L-Methionine                                      | 15.00                                  | 13.50                                  |
|                               | L-Phenylalanine                                   | 33.00                                  | 29.70                                  |
|                               | L-Threonine                                       | 47.60                                  | 42.84                                  |
|                               | L-Tryptophan                                      | 8.00                                   | 7.20                                   |
|                               | L-Tyrosine  | 36.20                                  | 32.52                                  |
|                               | L-Valine  | 46.80                                  | 42.12                                  |
| Vita-<br>mins                 | D-Calcium pantothenate                            | 2.00                                   | 1.80                                   |
|                               | Choline chloride                                  | 2.00                                   | 1.80                                   |
|                               | Folic acid  | 2.00                                   | 1.80                                   |
|                               | myo-Inositol                                      | 3.60                                   | 3.24                                   |
|                               | Nicotinamide                                      | 2.00                                   | 1.80                                   |
|                               | Pyridoxal x HCl                                   | 2.00                                   | 1.80                                   |
|                               | Riboflavin  | 0.20                                   | 0.18                                   |
|                               | Thiamine x HCl                                    | 2.00                                   | 1.80                                   |

Grace’s Insect Medium

**Description**  
The Grace’s Insect Medium was originally developed to culture insect cells including SF9 and SF21 cells. Moreover it supports a broad range of lepidopteran cells.

Special Media

Grace’s Insect Medium<sup>(2)</sup>  
without L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub> 500 ml P04-81500

Grace’s Insect Medium<sup>(2)</sup>  
with L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub> 500 ml P04-82500

Powder Media

Grace’s Insect Medium<sup>(1)</sup>  
without L-Glutamine 10 L P03-9010  
without NaHCO<sub>3</sub> 50 L P03-9050

Grace’s Insect Medium<sup>(1)</sup>  
with L-Glutamine 10 L P03-9110  
without NaHCO<sub>3</sub> 50 L P03-9150

Composition

|                          | Components                             | mg/L      |
|--------------------------|--|-----------|
| Inorganic<br>Salts       | Calcium chloride x 2H <sub>2</sub> O   | 1,324.6   |
|                          | Potassium chloride                     | 2,240.00  |
|                          | Magnesium chloride x 6H <sub>2</sub> O | 2,278.86  |
|                          | Magnesium sulfate dried                | 1,939.81  |
|                          | di-Sodium hydrogen<br>phosphate        | 876.92    |
| Other<br>Compo-<br>nents | DL-Malic acid                          | 670.00    |
|                          | Succinic acid                          | 60.00     |
|                          | Fructose                               | 400.00    |
|                          | Fumaric acid                           | 55.00     |
|                          | D(+)-Glucose anhydrous                 | 700.00    |
|                          | α-Ketoglutaric acid sodium<br>salt     | 425.66    |
|                          | D-Sucrose                              | 26,680.00 |
| Amino<br>Acids           | β-Alanine                              | 200.00    |
|                          | L-Alanine                              | 200.00    |
|                          | L-Arginine x HCl                       | 700.00    |
|                          | L-Asparagine x H <sub>2</sub> O        | 350.00    |
|                          | L-Aspartic acid                        | 350.00    |
|                          | L-Cystine                              | 19.18     |
|                          | L-Glutamine                            | 600.00    |
|                          | L-Glutamic acid                        | 600.00    |
|                          | Glycine                                | 650.00    |
|                          | L-Histidine Base                       | 2,500.00  |
|                          | L-Isoleucine                           | 50.00     |
|                          | L-Leucine                              | 75.00     |
|                          | L-Lysine x HCl                         | 625.00    |
|                          | L-Methionine                           | 50.00     |
|                          | L-Phenylalanine                        | 150.00    |
|                          | L-Proline                              | 350.00    |
|                          | L-Serine                               | 550.00    |
|                          | L-Threonine                            | 175.00    |
|                          | L-Tryptophan                           | 100.00    |
| Vitamins                 | L-Tyrosine                             | 50.00     |
|                          | L-Valine                               | 100.00    |
|                          | p-Aminobenzoic acid                    | 0.02      |
|                          | D(+)-Biotin                            | 0.01      |
|                          | D-Ca-Pantothenate                      | 0.02      |
|                          | Choline chloride                       | 0.20      |
|                          | Folic acid                             | 0.02      |
|                          | myo-Inositol                           | 0.02      |
|                          | Niacin                                 | 0.02      |
|                          | Pyridoxine x HCl                       | 0.02      |
|                          | Riboflavin                             | 0.02      |
|                          | Thiamine x HCl                         | 0.02      |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Ham’s F10 Medium

**Description**  
Ham’s F10 is an alternative to Ham’s F12 and it was used primarily to culture CHO-cells. Today, Ham’s F10 can be used with or without FBS for many different cell cultures. It is used for example for primary cells of rat and chicken, but also for human diploid cells.

Liquid Media

Ham’s F10 Medium<sup>(1)</sup>  
with L-Glutamine  
with 1.2 g/L NaHCO<sub>3</sub>      500 ml    P04-12500

Special Media

Ham’s F10 Medium<sup>(2)</sup>  
without L-Glutamine  
with 1.2 g/L NaHCO<sub>3</sub>      500 ml    P04-12050

Ham’s F10 Medium<sup>(2)</sup>  
with stab. Glutamine  
with 1.2 g/L NaHCO<sub>3</sub>      500 ml    P04-13500

Ham’s F10 Medium<sup>(2)</sup>  
with L-Glutamine  
with 25 mM Hepes  
with 1.2 g/L NaHCO<sub>3</sub>      500 ml    P04-13050

Ham’s F10 Medium<sup>(2)</sup>  
without L-Glutamine  
without Phenol red  
with 1.2 g/L NaHCO<sub>3</sub>      500 ml    P04-12049

Powder Media

Ham’s F-10 Medium<sup>(1)</sup>  
without L-Glutamine      10 L      P03-5010  
without NaHCO<sub>3</sub>          50 L      P03-5050

Ham’s F-10 Medium<sup>(1)</sup>  
with L-Glutamine          10 L      P03-3910  
without NaHCO<sub>3</sub>          50 L      P03-3950

Ham’s F-10 Medium<sup>(1)</sup>  
with L-Glutamine          10 L      P03-4010  
with 25 mM Hepes          10 L      P03-4010  
without NaHCO<sub>3</sub>          50 L      P03-4050

Composition

|                  | Components                             | mg/L    |
|------------------|--|---------|
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O   | 44.09   |
|                  | Copper(II) sulfate x 5H <sub>2</sub> O | 0.003   |
|                  | Iron(II) sulfate x 7H <sub>2</sub> O   | 0.834   |
|                  | Magnesium sulfate dried                | 106.06  |
|                  | Potassium chloride                     | 285.00  |
|                  | Potassium dihydrogen phosphate         | 83.00   |
|                  | Sodium chloride                        | 7400.00 |
|                  | di-Sodium hydrogen phosphate           | 153.70  |
|                  | Zinc sulfate x 7H <sub>2</sub> O       | 0.029   |
| Other Components | D(+)-Glucose anhydrous                 | 1100.00 |
|                  | Hypoxanthine                           | 4.08    |
|                  | DL-α-Lipoic acid                       | 0.21    |
|                  | Hepes                                  | 5958.00 |
|                  | Phenol red                             | 1.20    |
|                  | Sodium pyruvate                        | 110.00  |
|                  | 2'- Deoxythymidine                     | 0.73    |
|                  |  |         |
| Amino Acids      | L-Alanine                              | 8.91    |
|                  | L-Arginine x HCl                       | 211.00  |
|                  | L-Asparagine x H <sub>2</sub> O        | 15.00   |
|                  | L-Aspartic acid                        | 13.30   |
|                  | L-Cysteine x HCl x H <sub>2</sub> O    | 35.12   |
|                  | L-Glutamine                            | 146.20  |
|                  | L-Glutamic acid                        | 14.70   |
|                  | Glycine                                | 7.51    |
|                  | L-Histidine x HCl x H <sub>2</sub> O   | 21.00   |
|                  | L-Isoleucine                           | 2.60    |
|                  | L-Leucine                              | 13.10   |
|                  | L-Lysine x HCl                         | 29.30   |
|                  | L-Methionine                           | 4.48    |
|                  | L-Phenylalanine                        | 4.96    |
|                  | L-Proline                              | 11.50   |
|                  | L-Serine                               | 10.50   |
|                  | L-Threonine                            | 3.57    |
|                  | L-Tryptophan                           | 0.60    |
|                  | L-Tyrosine                             | 1.81    |
|                  | L-Valine                               | 3.50    |
| Vitamins         | D(+)-Biotin                            | 0.024   |
|                  | D-Calcium pantothenate                 | 0.715   |
|                  | Choline chloride                       | 0.698   |
|                  | Folic acid                             | 1.32    |
|                  | myo-Inositol                           | 0.541   |
|                  | Nicotinamide                           | 0.615   |
|                  | Pyridoxine x HCl                       | 0.21    |
|                  | Riboflavin                             | 0.376   |
|                  | Thiamine x HCl                         | 1.01    |
|                  | Vitamin B12                            | 1.36    |
|                  |  |         |
|                  |  |         |
|                  |  |         |

When 5,958.00 mg/L HEPES is included there is only 6,900.00 mg/L sodium chloride.

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Ham’s F12 Medium

**Description**  
In the past Ham’s F12 was the first choice for a serum-free cultivation of CHO-cells and is now substituted through better serum-free systems like our Panserin C6000, which is protein-free in addition. However, Ham’s F12 is an appropriate medium for mammalian cells when it is supplemented with FBS. It contains a high concentration of vitamins, amino acids and trace elements. The content of zinc sulphate is increased and it contains putrescine and linoleic acid.

Liquid Media

Ham’s F12 Medium<sup>(1)</sup>  
without L-Glutamine  
with 1.176 g/L NaHCO<sub>3</sub>      500 ml    P04-14550

Ham’s F12 Medium<sup>(1)</sup>  
with L-Glutamine  
with 1.176 g/L NaHCO<sub>3</sub>      500 ml    P04-14500

Ham’s F12 Medium<sup>(1)</sup>  
with stab. Glutamine  
with 1.176 g/L NaHCO<sub>3</sub>      500 ml    P04-15500

Special Media

Ham’s F12 Medium<sup>(2)</sup>  
with L-Glutamine  
without Phenol red  
with 25 mM Hepes  
with 1.176 g/L NaHCO<sub>3</sub>      500 ml    P04-14501

Ham’s F12 Medium<sup>(2)</sup>  
without L-Glutamine  
without Phenol red  
with 1.176 g/L NaHCO<sub>3</sub>      500 ml    P04-14559

Ham ’s F12K Medium<sup>(2)</sup>  
with L-Glutamine  
with 2.5 g/L NaHCO<sub>3</sub>          500 ml    P04-15600

Powder Media

Ham’s F12 Medium<sup>(1)</sup>  
with L-Glutamine          10 L      P03-4110  
without NaHCO<sub>3</sub>          50 L      P03-4150

Composition

|                  | Components                             | mg/L    |
|------------------|--|---------|
| Inorganic Salts  | Calcium chloride anhydrous             | 33.30   |
|                  | Copper(II) sulfate x 5H <sub>2</sub> O | 0.003   |
|                  | Iron(II) sulfate x 7H <sub>2</sub> O   | 0.834   |
|                  | Magnesium chloride x 6H <sub>2</sub> O | 122.00  |
|                  | Potassium chloride                     | 223.65  |
|                  | Sodium chloride                        | 7599.9  |
|                  | di-Sodium hydrogen phosphate anhydrous | 142.04  |
|                  | Zinc sulfate x 7H <sub>2</sub> O       | 0.86    |
|                  |  |         |
| Other Components | D(+)-Glucose anhydrous                 | 1801.60 |
|                  | Hepes                                  | 5958.00 |
|                  | Hypoxanthine                           | 4.08    |
|                  | Linoleic acid                          | 0.084   |
|                  | DL-Lipoic acid                         | 0.21    |
|                  | Phenol red                             | 1.20    |
|                  | Putrescine x 2HCl                      | 0.16    |
|                  | Sodium pyruvate                        | 110.00  |
|                  | Thymidine                              | 0.73    |
| Amino Acids      | L-Alanine                              | 8.91    |
|                  | L-Arginine x HCl                       | 210.70  |
|                  | L-Asparagine x H <sub>2</sub> O        | 15.01   |
|                  | L-Aspartic acid                        | 13.31   |
|                  | L-Cysteine x HCl x H <sub>2</sub> O    | 35.12   |
|                  | L-Glutamine                            | 146.20  |
|                  | L-Glutamic acid                        | 14.71   |
|                  | Glycine                                | 7.51    |
|                  | L-Histidine x HCl x H <sub>2</sub> O   | 20.96   |
|                  | L-Isoleucine                           | 3.94    |
|                  | L-Leucine                              | 13.12   |
|                  | L-Lysine x HCl                         | 36.54   |
|                  | L-Methionine                           | 4.48    |
|                  | L-Phenylalanine                        | 4.96    |
|                  | L-Proline                              | 34.53   |
|                  | L-Serine                               | 10.51   |
|                  | L-Threonine                            | 11.91   |
| Vitamins         | L-Tryptophan                           | 2.04    |
|                  | L-Tyrosine                             | 5.44    |
|                  | L-Valine                               | 11.71   |
|                  |  |         |
|                  | D(+)-Biotin                            | 0.007   |
|                  | D-Calcium pantothenate                 | 0.24    |
|                  | Choline chloride                       | 13.96   |
|                  | Folic acid                             | 1.32    |
|                  | myo-Inositol                           | 18.00   |
|                  | Nicotinamide                           | 0.037   |
|                  | Pyridoxine x HCl                       | 0.062   |
|                  | Riboflavin                             | 0.038   |
|                  | Thiamine x HCl                         | 0.34    |
|                  | Vitamin B12                            | 1.36    |

When 5,958.00 mg/L HEPES is included there is only 7,099.00 mg/L sodium chloride.

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Iscove’s Modified Dulbecco’s Medium

**Description**  
The IMDM is a modified DMEM, with a higher content of vitamins, selenium and amino acids. As it is supplemented with albumin, transferrin and soy lipids it can be excellently applied for culturing lymphocytes, marrow cells or hybridoma cells. Note: for hybridomas there is a better and highly efficient protein-free medium available: our Panserin H4000.

Liquid Media

|   |        |           |
|---|--------|-----------|
| IMDM <sup>(1)</sup><br>without L-Glutamine<br>with 3.024 g/L NaHCO <sub>3</sub>                     | 500 ml | P04-20250 |
| IMDM <sup>(1)</sup><br>with L-Glutamine<br>with 3.024 NaHCO <sub>3</sub>                            | 500 ml | P04-20350 |
| IMDM <sup>(1)</sup><br>without L-Glutamine<br>with 25 mM Hepes<br>with 3.024 g/L NaHCO <sub>3</sub> | 500 ml | P04-20050 |
| IMDM <sup>(1)</sup><br>with L-Glutamine<br>with 25 mM Hepes<br>with 3.024 g/L NaHCO <sub>3</sub>    | 500 ml | P04-20150 |

Composition

|                  | Components                                     | mg/L     |
|------------------|--|----------|
| Inorganic Salts  | Calcium chloride anhydrous                     | 165.00   |
|                  | Potassium chloride                             | 330.00   |
|                  | Potassium nitrate                              | 0.076    |
|                  | Magnesium sulfate anhydrous                    | 97.66    |
|                  | Sodium chloride                                | 5,005.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 125.00   |
|                  | Sodium selenite x 5H <sub>2</sub> O            | 0.01     |
| Other Components | D(+)-Glucose anhydrous                         | 4500.00  |
|                  | Hepes  | 5958.00  |
|                  | Sodium pyruvate                                | 110.00   |
|                  | Phenol red                                     | 15.00    |
| Amino Acids      | L-Alanine                                      | 25.00    |
|                  | L-Arginine x HCl                               | 84.00    |
|                  | L-Asparagine x H <sub>2</sub> O                | 28.40    |
|                  | L-Aspartic acid                                | 30.00    |
|                  | L-Cystine x 2HCl                               | 91.24    |
|                  | L-Glutamine                                    | 584.00   |
|                  | L-Glutamic acid                                | 75.00    |
|                  | Glycine  | 30.00    |
|                  | L-Histidine x HCl x H <sub>2</sub> O           | 42.00    |
|                  | L-Isoleucine                                   | 105.00   |
|                  | L-Leucine                                      | 105.00   |
|                  | L-Lysine x HCl                                 | 146.00   |
|                  | L-Methionine                                   | 30.00    |
|                  | L-Phenylalanine                                | 66.00    |
|                  | L-Proline                                      | 40.00    |
|                  | L-Serine                                       | 42.00    |
|                  | L-Threonine                                    | 95.00    |
|                  | L-Tryptophan                                   | 16.00    |
|                  | L-Tyrosine x 2Na x 2H <sub>2</sub> O           | 104.2    |
|                  | L-Valine                                       | 94.00    |
| Vitamins         | D(+)-Biotin                                    | 0.0130   |
|                  | D-Calcium pantothenate                         | 4.00     |
|                  | Choline chloride                               | 4.00     |
|                  | Folic acid                                     | 4.00     |
|                  | myo-Inositol                                   | 7.20     |
|                  | Nicotinamide                                   | 4.00     |
|                  | Pyridoxine x HCl                               | 4.00     |
|                  | Riboflavin                                     | 0.40     |
|                  | Thiamine x HCl                                 | 4.00     |
|                  | Vitamin B12                                    | 0.013    |

When 5,958.00 mg/L HEPES is included there is only 4,505.00 mg/L sodium chloride.

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Iscove’s Modified Dulbecco’s Medium

Special Media

|  |        |             |
|--|--------|-------------|
| IMDM <sup>(2)</sup><br>without L-Glutamine<br>with 1.0 g/L Glucose<br>with 3.024 g/L NaHCO <sub>3</sub>                                | 500 ml | P04-20259   |
| IMDM <sup>(2)</sup><br>with stab. Glutamine<br>with 25 mM Hepes<br>without Phenol red<br>315 mOsm<br>with 3.024 g/L NaHCO <sub>3</sub> | 500 ml | P04-20451S1 |
| IMDM <sup>(2)</sup><br>with L-Glutamine<br>with 25 mM Hepes<br>320 mOsm<br>with 3.024 g/L NaHCO <sub>3</sub>                           | 500 ml | P04-20150S2 |
| IMDM <sup>(2)</sup><br>with L-Glutamine<br>with 1.5 g/L NaHCO <sub>3</sub>   | 500 ml | P04-20351   |
| IMDM <sup>(2)</sup><br>with stab. Glutamine<br>with 25 mM Hepes<br>with 3.024 g/L NaHCO <sub>3</sub>                                   | 500 ml | P04-20450   |
| IMDM <sup>(2)</sup><br>with stab. Glutamine<br>with 25 mM Hepes<br>without Phenol red<br>with 3.024 g/L NaHCO <sub>3</sub>             | 500 ml | P04-20451   |

Powder Media

|   |              |                      |
|---|--------------|----------------------|
| IMDM <sup>(1)</sup><br>without L-Glutamine<br>without NaHCO <sub>3</sub>                  | 10 L<br>50 L | P03-5210<br>P03-5250 |
| IMDM <sup>(1)</sup><br>with L-Glutamine<br>without NaHCO <sub>3</sub>                     | 10 L<br>50 L | P03-1310<br>P03-1350 |
| IMDM <sup>(1)</sup><br>with L-Glutamine<br>with 25 mM Hepes<br>without NaHCO <sub>3</sub> | 10 L<br>50 L | P03-1410<br>P03-1450 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

IPL-41 Insect Medium

| Composition      |  |         |
|------------------|--|---------|
|                  | Components                                     | mg/L    |
| Inorganic Salts  | Ammonium heptamolybdate x 4H <sub>2</sub> O    | 0.04    |
|                  | Calcium chloride x 2H <sub>2</sub> O           | 662.31  |
|                  | Cobalt(II) chloride x 6H <sub>2</sub> O        | 0.05    |
|                  | Copper chloride x 2H <sub>2</sub> O            | 0.20    |
|                  | Iron(II) sulfate x 7H <sub>2</sub> O           | 0.55    |
|                  | Magnesium sulfate dried                        | 1311.40 |
|                  | Manganese chloride x 4H <sub>2</sub> O         | 0.02    |
|                  | Potassium chloride                             | 1200.00 |
|                  | Sodium chloride                                | 2850,00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 1160.00 |
|                  | Zinc chloride                                  | 0.04    |
| Other Components | Fumaric acid                                   | 4.40    |
|                  | D(+)-Glucose anhydrous                         | 2500.00 |
|                  | α-Ketoglutaric acid sodium salt                | 34.05   |
|                  | DL-Malic acid                                  | 53.60   |
|                  | D-Maltose x H <sub>2</sub> O                   | 1052.58 |
|                  | Succinic acid                                  | 4.80    |
|                  | Sucrose  | 1650.00 |
|                  |  |         |
| Amino Acids      | β-Alanine                                      | 300.00  |
|                  | L-Arginine x HCl                               | 800.00  |
|                  | L-Aspartic acid                                | 1300.00 |
|                  | L-Asparagine x H <sub>2</sub> O                | 1477.14 |
|                  | L-Cystine                                      | 100.00  |
|                  | L-Glutamine                                    | 1000.00 |
|                  | L-Glutamic acid                                | 1500.00 |
|                  | Glycine  | 200.00  |
|                  | L-Histidine Base                               | 200.00  |
|                  | L-Hydroxyproline                               | 800.00  |
|                  | L-Isoleucine                                   | 750.00  |
|                  | L-Leucine                                      | 250.00  |
|                  | L-Lysine x HCl                                 | 700.00  |
|                  | L-Methionine                                   | 1000.00 |
|                  | L-Phenylalanine                                | 1000.00 |
|                  | L-Proline                                      | 500.00  |
|                  | L-Serine                                       | 200.00  |
|                  | L-Threonine                                    | 200.00  |
|                  | L-Tryptophan                                   | 100.00  |
|                  | L-Tyrosine                                     | 250.02  |
|                  | L-Valine                                       | 500.00  |
|                  |  |         |
| Vitamins         | p-Aminobenzoic acid                            | 0.32    |
|                  | D(+)-Biotin                                    | 0.16    |
|                  | D-Calcium pantothenate                         | 0.008   |
|                  | Choline chloride                               | 20.00   |
|                  | Folic acid                                     | 0.08    |
|                  | myo-Inositol                                   | 0.40    |
|                  | Nicotinic acid                                 | 0.16    |
|                  | Nicotinamide                                   | 0.16    |
|                  | Pyridoxine x HCl                               | 0.40    |
|                  | Riboflavin                                     | 0.08    |
|                  | Thiamine x HCl                                 | 0.08    |
|                  | Vitamine B12                                   | 0.24    |

**Description**  
IPL-41 is primarily used for the growth and maintenance of lepidopteran cells and for the propagation of viruses in these cells lines. The medium is also used for long time culture of baculo-virus infected spodotera cells.

Special Media

IPL-41 Insect Medium<sup>(2)</sup>  
with L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-85600

Powder Media

IPL-41 Insect Medium<sup>(1)</sup>  
without L-Glutamine      10 L      P03-9210  
without NaHCO<sub>3</sub>          50 L      P03-9250

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Joklik-MEM

**Description**  
Joklik's MEM is a modification of MEM for suspension cultures. Due to the absence of calcium chloride in this formulation the attachment of cells is reduced.

| Composition      |  |          |
|------------------|--|----------|
|                  | Components                                     | mg/L     |
| Inorganic Salts  | Magnesium chloride x 6H <sub>2</sub> O         | 200.00   |
|                  | Potassium chloride                             | 400.00   |
|                  | Sodium chloride                                | 6,500.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 1,327.00 |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                         | 2,000.00 |
|                  | Phenol red                                     | 10.00    |
| Amino Acids      | L-Arginine x HCl                               | 126.00   |
|                  | L-Cystine                                      | 24.00    |
|                  | L-Glutamine                                    | 294.00   |
|                  | L-Histidine Base                               | 31.00    |
|                  | L-Isoleucine                                   | 52.00    |
|                  | L-Leucine                                      | 52.00    |
|                  | L-Lysine x H <sub>2</sub> O                    | 65.00    |
|                  | L-Methionine                                   | 15.00    |
|                  | L-Phenylalanine                                | 32.00    |
|                  | L-Threonine                                    | 48.00    |
|                  | L-Tryptophan                                   | 10.00    |
|                  | L-Tyrosine                                     | 32.60    |
|                  | L-Valine                                       | 46.00    |
| Vitamins         | D-Calcium pantothenate                         | 1.00     |
|                  | Choline chloride                               | 1.00     |
|                  | Folic acid                                     | 1.00     |
|                  | myo-Inositol                                   | 2.00     |
|                  | Nicotinamide                                   | 1.00     |
|                  | Pyridoxal x HCl                                | 1.00     |
|                  | Riboflavin                                     | 0.10     |
|                  | Thiamine x HCl                                 | 1.00     |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Liquid Media

Joklik – MEM<sup>(1)</sup>  
Hepes Medium  
with L-Glutamine                      500 ml    P04-21300  
with 3.6 g/L Hepes

Special Media

Joklik - MEM<sup>(2)</sup>  
modified for spinner culture  
with EBSS (modified)  
without L-Glutamine  
without Antibiotica  
without Calciumchloride  
with 2.0 g/L NaHCO<sub>3</sub>                      500 ml    P04-21200

Powder Media

Joklik - MEM<sup>(1)</sup>  
modified for spinner culture  
with EBSS (modified)  
without L-Glutamine  
without Antibiotica  
without Calciumchloride    10 L      P03-02010P  
without NaHCO<sub>3</sub>                      50 L      P03-02050P



Leibovitz’s L-15 Medium

**Description**  
L-15 contains no sodium hydrogen carbonate and no bicarbonate, because it is buffered already by a high concentration of amino acids. The L-15 medium supports the growth of established cells like Hep-2, but also human nerve cells and primary tissue explants. With 10 % tryptose phosphate broth it is also ideally suited for the cultivation of insect cell lines.

| Composition       |   |          |
|-------------------|---|----------|
|                   | Components  | mg/L     |
| Inorganic Salts   | Calcium chloride x 2H <sub>2</sub> O                    | 185.44   |
|                   | Magnesium chloride x 6H <sub>2</sub> O                  | 200.00   |
|                   | Magnesium sulfate dried                                 | 139.53   |
|                   | Potassium chloride                                      | 400.00   |
|                   | Potassium dihydrogen phosphate                          | 60.00    |
|                   | Sodium chloride   | 8,000.00 |
| Other Compo-nents | di-Sodium hydrogen phosphate                            | 190.00   |
|                   | D(+)-Galactose anhydrous                                | 900.00   |
|                   | Hepes   | 5,958.00 |
|                   | Phenol red  | 10.00    |
|                   | Sodium pyruvate   | 550.00   |
| Amino Acids       | L-Alanine   | 225.00   |
|                   | L-Arginine Base   | 500.00   |
|                   | L-Asparagine x H <sub>2</sub> O                         | 250.00   |
|                   | L-Cysteine  | 120.00   |
|                   | L-Glutamine   | 300.00   |
|                   | Glycine   | 200.00   |
|                   | L-Histidine Base  | 250.00   |
|                   | L-Isoleucine  | 250.00   |
|                   | L-Leucine   | 125.00   |
|                   | L-Lysine x HCl  | 93.75    |
|                   | L-Methionine  | 75.00    |
|                   | L-Phenylalanine   | 125.00   |
|                   | L-Serine  | 200.00   |
|                   | L-Threonine   | 300.00   |
|                   | L-Tryptophan  | 20.00    |
|                   | L-Tyrosine  | 300.00   |
|                   | L-Valine  | 100.00   |
| Vitamins          | D-Calcium pantothenate                                  | 1.00     |
|                   | Choline chloride  | 1.00     |
|                   | Folic acid  | 1.00     |
|                   | myo-Inositol  | 2.00     |
|                   | Nicotinamide  | 1.00     |
|                   | Pyridoxine x HCl  | 1.00     |
|                   | Riboflavin-5'-phosphate sodium salt x 2H <sub>2</sub> O | 0.1075   |
|                   | Thiamine monophosphate chloride x2 H <sub>2</sub> O     | 1.00     |
|                   |   |          |
|                   |   |          |

When 5,958.00 mg/L HEPES is included there is only 7,500.00 mg/L sodium chloride.

| Liquid Media                           |        |           |  |
|--|--------|-----------|--|
| Leibovitz’s L-15 Medium <sup>(1)</sup> |        |           |  |
| without L-Glutamine                    |        |           |  |
| without NaHCO <sub>3</sub>             | 500 ml | P04-27055 |  |
| Leibovitz’s L-15 Medium <sup>(1)</sup> |        |           |  |
| with L-Glutamine                       |        |           |  |
| without NaHCO <sub>3</sub>             | 500 ml | P04-27500 |  |

| Special Media                          |        |           |  |
|--|--------|-----------|--|
| Leibovitz’s L-15 Medium <sup>(2)</sup> |        |           |  |
| with stab. Glutamine                   |        |           |  |
| without NaHCO <sub>3</sub>             | 500 ml | P04-27050 |  |
| Leibovitz’s L-15 Medium <sup>(2)</sup> |        |           |  |
| without L-Glutamine                    |        |           |  |
| <b>without Phenol red</b>              |        |           |  |
| without NaHCO <sub>3</sub>             | 500 ml | P04-27054 |  |

| Powder Media                           |      |          |  |
|--|------|----------|--|
| Leibovitz’s L-15 Medium <sup>(1)</sup> |      |          |  |
| with L-Glutamine                       | 10 L | P03-1510 |  |
| without NaHCO <sub>3</sub>             | 50 L | P03-1550 |  |
| Leibovitz’s L-15 Medium <sup>(1)</sup> |      |          |  |
| with L-Glutamine                       |      |          |  |
| with 25 mM Hepes                       | 10 L | P03-1610 |  |
| without NaHCO <sub>3</sub>             | 50 L | P03-1650 |  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Mc Coy’s 5A Medium

**Description**  
Mc Coy’s 5A Medium is a complete medium with all amino acids and vitamins. It is used for growing primary cultures. This group contains marrow cells, gingival cells, adrenal cells, spleen cells, lung cells, rat embryos and other cell types.

| Liquid Media                                 |        |           |  |
|--|--------|-----------|--|
| Mc Coy’s 5A Medium (modified) <sup>(1)</sup> |        |           |  |
| with L-Glutamine                             |        |           |  |
| with 2.2 g/L NaHCO <sub>3</sub>              | 500 ml | P04-05500 |  |

|  |        |           |  |
|--|--------|-----------|--|
| Mc Coy’s 5A Medium (modified) <sup>(1)</sup> |        |           |  |
| with stab. Glutamine                         |        |           |  |
| with 2.2 g/L NaHCO <sub>3</sub>              | 500 ml | P04-06500 |  |

| Special Media                                |        |           |  |
|--|--------|-----------|--|
| Mc Coy’s 5A Medium (modified) <sup>(2)</sup> |        |           |  |
| with L-Glutamine                             |        |           |  |
| with 25 mM Hepes                             |        |           |  |
| with 2.2 g/L NaHCO <sub>3</sub>              | 500 ml | P04-05050 |  |

|                                   |        |           |  |
|-----------------------------------|--------|-----------|--|
| Mc Coy’s 5A Medium <sup>(2)</sup> |        |           |  |
| without L-Glutamine               |        |           |  |
| <b>without Phenol red</b>         |        |           |  |
| with 2.2 g/L NaHCO <sub>3</sub>   | 500 ml | P04-05610 |  |

| Powder Media                                |      |          |  |
|---|------|----------|--|
| McCoy’s 5A Medium (modified) <sup>(1)</sup> |      |          |  |
| with L-Glutamine                            | 10 L | P03-1710 |  |
| without NaHCO <sub>3</sub>                  | 50 L | P03-1750 |  |

|   |      |          |  |
|---|------|----------|--|
| McCoy’s 5A Medium (modified) <sup>(1)</sup> |      |          |  |
| with L-Glutamine                            |      |          |  |
| with 25 mM Hepes                            | 10 L | P03-1810 |  |
| without NaHCO <sub>3</sub>                  | 50 L | P03-1850 |  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



| Composition       |  |          |
|-------------------|--|----------|
|                   | Components                                     | mg/L     |
| Inorganic Salts   | Calcium chloride x 2H <sub>2</sub> O           | 132.46   |
|                   | Magnesium sulfate dried                        | 139.53   |
|                   | Potassium chloride                             | 400.00   |
|                   | Sodium chloride                                | 6,460.00 |
|                   | Sodium dihydrogen phosphate x H <sub>2</sub> O | 580.00   |
| Other Compo-nents | D(+)-Glucose anhydrous                         | 3,000.00 |
|                   | Glutathione (red.)                             | 0.50     |
|                   | Hepes  | 5,958.00 |
|                   | Bacto - Peptone                                | 600.00   |
| Amino Acids       | Phenol red                                     | 10.00    |
|                   | L-Alanine                                      | 13.36    |
|                   | L-Arginine x HCl                               | 42.10    |
|                   | L-Asparagine x H <sub>2</sub> O                | 45.00    |
|                   | L-Aspartic acid                                | 19.97    |
|                   | L-Cysteine                                     | 24.24    |
|                   | L-Glutamine                                    | 219.20   |
|                   | L-Glutamic acid                                | 22.10    |
|                   | Glycine  | 7.50     |
|                   | L-Histidine x HCl x H <sub>2</sub> O           | 20.76    |
|                   | L-Hydroxyproline                               | 19.70    |
|                   | L-Isoleucine                                   | 39.36    |
|                   | L-Leucine                                      | 39.36    |
|                   | L-Lysine x HCl                                 | 36.50    |
|                   | L-Methionine                                   | 14.90    |
|                   | L-Phenylalanine                                | 16.50    |
|                   | L-Proline                                      | 17.30    |
|                   | L-Serine                                       | 26.30    |
|                   | L-Threonine                                    | 17.90    |
| Vitamins          | L-Tryptophan                                   | 3.10     |
|                   | L-Tyrosine                                     | 18.10    |
|                   | L-Valine                                       | 17.60    |
|                   | p-Aminobenzoic acid                            | 1.00     |
|                   | Ascorbic acid                                  | 0.50     |
|                   | D(+)-Biotin                                    | 0.20     |
|                   | D-Calcium pantothenate                         | 0.20     |
|                   | Choline chloride                               | 5.00     |
|                   | Folic acid                                     | 10.00    |
|                   | myo-Inositol                                   | 36.00    |
|                   | Nicotinamide                                   | 0.50     |
|                   | Nicotinic acid                                 | 0.50     |
|                   | Pyridoxal x HCl                                | 0.50     |
|                   | Pyridoxine x HCl                               | 0.50     |
|                   | Riboflavin                                     | 0.20     |
|                   | Thiamine x HCl                                 | 0.20     |
|                   | Vitamin B12                                    | 2.00     |

When 5,958.00 mg/L HEPES is included there is only 5,960.00 mg/L sodium chloride.

MCDB 131 Medium

| Composition      |   |          |
|------------------|---|----------|
|                  | Components                              | mg/L     |
| Inorganic Salts  | Ammonium Metavandate                    | 0.0006   |
|                  | Calcium Chloride x 2H <sub>2</sub> O    | 235.05   |
|                  | Copper(II) Sulfate x 5H <sub>2</sub> O  | 0.0012   |
|                  | Iron (III) sulfate x 7H <sub>2</sub> O  | 0.283    |
|                  | Magnesiumsulfate dried                  | 1565.20  |
|                  | Manganese Sulfate x H <sub>2</sub> O    | 0.0002   |
|                  | Ammonium Molybdate x 4H <sub>2</sub> O  | 0.0037   |
|                  | Nickel Chloride x 6H <sub>2</sub> O     | 0.0007   |
|                  | Potassium Chloride                      | 298.00   |
|                  | Sodium Chloride                         | 6,430.00 |
|                  | Sodium Metasilicate x 5H <sub>2</sub> O | 2.09     |
|                  | Di-Sodium hydrogen phosphate            | 71.00    |
|                  | Sodium Selenite anhydrous               | 0.0039   |
|                  | Zinc Sulfate x 7H <sub>2</sub> O        | 0.0003   |
| Other Components | Adenine                                 | 0.135    |
|                  | D-Glucose                               | 1,000.00 |
|                  | DL-α-Lipoic acid                        | 0.0021   |
|                  | Phenol Red                              | 10.00    |
|                  | Putrescine x 2HCl                       | 0.002    |
|                  | Sodium pyruvate                         | 110.00   |
|                  | 2'Deoxythymidine                        | 0.024    |
|                  |   |          |
| Amino Acids      | L-Alanine                               | 2.70     |
|                  | L-Arginine x HCl                        | 63.20    |
|                  | L-Asparagine x H <sub>2</sub> O         | 15.00    |
|                  | L-Aspartic Acid                         | 13.30    |
|                  | L-Cysteine x HCl x H <sub>2</sub> O     | 35.00    |
|                  | L-Glutamic Acid                         | 4.00     |
|                  | L-Glutamine                             | 1,461.00 |
|                  | Glycine                                 | 2.30     |
|                  | L-Histidine x HCl x H <sub>2</sub> O    | 42.00    |
|                  | L-Isoleucine                            | 66.00    |
|                  | L-Leucine                               | 131.00   |
|                  | L-Lysine x HCl                          | 182.00   |
|                  | L-Methionine                            | 15.00    |
|                  | L-Phenylalanine                         | 33.00    |
|                  | L-Proline                               | 11.50    |
|                  | L-Serine                                | 32.00    |
|                  | L-Threonine                             | 12.00    |
|                  | L-Tryptophan                            | 4.10     |
|                  | L-Tyrosine                              | 18.10    |
|                  | L-Valine                                | 117.10   |
| Vitamins         | D-Biotin                                | 0.0073   |
|                  | Choline Chloride                        | 13.96    |
|                  | Folic Acid                              | 0.60     |
|                  | myo-Inositol                            | 7.20     |
|                  | Niacinamide                             | 6.10     |
|                  | D-Calcium-pantothenate                  | 12.00    |
|                  | Pyridoxine x HCl                        | 2.10     |
|                  | Riboflavin                              | 0.0038   |
|                  | Thiamine x HCl                          | 3.40     |
|                  | Vitamin B12                             | 0.0136   |
|                  |   |          |

Description

MCDB 131 is a medium for the cultivation of human micro-vascular endothelial cells under reduced serum content. For this purpose it has be supplemented with dialyzed serum, EGF and hydrocortisone.

Liquid Media

MCDB 131<sup>(1)</sup>  
without L-Glutamine  
with 1.176 g/L NaHCO<sub>3</sub>    500 ml    P04-80057

Special Media

MCDB 131<sup>(2)</sup>  
with L-Glutamine  
with 1.176 g/L NaHCO<sub>3</sub>    500 ml    P04-80053

MCDB 131<sup>(2)</sup>  
without Glutamine  
with 25 mM Hepes  
with 1.176 g/L NaHCO<sub>3</sub>    500 ml    P04-80054

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Medium 199 with Earle´s Salts

Description

The M199 was originally developed to assay the nutrient demand of embryonic chicken fibroblasts. But it works very well with cells from many different animal species. For example, it is used for vaccine production in virology. For long term cultures serum should be added.

| Composition      |                                       |          |
|------------------|---------------------------------------|----------|
|                  | Components                            | mg/L     |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O  | 264.92   |
|                  | Iron(III) nitrate x 9H <sub>2</sub> O | 0.72     |
|                  | Magnesium sulfate dried               | 139.52   |
|                  | Potassium chloride                    | 400.00   |
|                  | Sodium acetate x 3H <sub>2</sub> O    | 82.95    |
|                  | Sodium chloride                       | 6,800.00 |
|                  | Sodium dihydrogen phosphate           | 140.00   |
|                  |                                       |          |
|                  |                                       |          |
| Other Components | Adenine sulfate                       | 10.00    |
|                  | AMP                                   | 0.20     |
|                  | ATP                                   | 1.00     |
|                  | Cholesterol                           | 0.20     |
|                  | 2'-Deoxyribose                        | 0.50     |
|                  | D(+)-Glucose anhydrous                | 1,000.00 |
|                  | Glutathione (red,)                    | 0.05     |
|                  | Guanine x HCl                         | 0.30     |
|                  | Hepes                                 | 5,958.00 |
|                  | Hypoxanthine                          | 0.30     |
|                  | Phenol red                            | 10.00    |
|                  | D-Ribose                              | 0.50     |
|                  | Thymine                               | 0.30     |
|                  | Tween 80                              | 4.90     |
| Amino Acids      | Uracil                                | 0.30     |
|                  | Xanthine                              | 0.30     |
|                  | L-Alanine                             | 25.00    |
|                  | L-Arginine x HCl                      | 70.00    |
|                  | L-Aspartic acid                       | 30.00    |
|                  | L-Cysteine x HCl x H <sub>2</sub> O   | 0.10     |
|                  | L-Cystine                             | 20.00    |
|                  | L-Glutamine                           | 100.00   |
|                  | L-Glutamic acid                       | 67.00    |
|                  | Glycine                               | 50.00    |
|                  | L-Histidine x HCl x H <sub>2</sub> O  | 21.88    |
|                  | L-Hydroxyproline                      | 10.00    |
|                  | L-Isoleucine                          | 20.00    |
|                  | L-Leucine                             | 60.00    |
|                  | L-Lysine x HCl                        | 70.00    |
|                  | L-Methionine                          | 15.00    |
|                  | L-Phenylalanine                       | 25.00    |
|                  | L-Proline                             | 40.00    |
|                  | L-Serine                              | 25.00    |
|                  | L-Threonine                           | 30.00    |
|                  | L-Tryptophan                          | 10.00    |
|                  | L-Tyrosine                            | 40.00    |
|                  | L-Valine                              | 25.00    |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



|          |                               |       |
|----------|-------------------------------|-------|
| Vitamins | p-Aminobenzoic acid           | 0.05  |
|          | Ascorbic acid                 | 0.05  |
|          | D(+)-Biotin                   | 0.01  |
|          | Calciferol                    | 0.10  |
|          | D-Calcium pantothenate        | 0.01  |
|          | Choline chloride              | 0.50  |
|          | Folic acid                    | 0.01  |
|          | myo-Inositol                  | 0.05  |
|          | Menadione                     | 0.01  |
|          | Nicotinic acid                | 0.025 |
|          | Nicotinamide                  | 0.025 |
|          | Pyridoxal x HCl               | 0.025 |
|          | Pyridoxol x HCl               | 0.025 |
|          | Riboflavin                    | 0.01  |
|          | DL-α-Tocopherol phosphate-Na2 | 0.01  |
|          | Thiamine x HCl                | 0.01  |
|          | Vitamin A acetate             | 0.14  |
|          |                               |       |
|          |                               |       |

When 5,958.00 mg/L HEPES is included there is only 6,300.00 mg/L sodium chloride.

Liquid Media

M199 with EBSS<sup>(1)</sup>  
without L-Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>    500 ml    P04-07500

Special Media

M199 with EBSS<sup>(2)</sup>  
with L-Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>    500 ml    P04-07050

M199 with EBSS<sup>(2)</sup>  
with stab. Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>    500 ml    P04-07250

M199 with EBSS<sup>(2)</sup>  
with L-Glutamine  
with 25 mM Hepes  
with 2.2 g/L NaHCO<sub>3</sub>    500 ml    P04-07150

Powder Media

M199 with EBSS<sup>(1)</sup>  
with L-Glutamine    10 L    P03-1910  
without NaHCO<sub>3</sub>    50 L    P03-1950

Medium 199 with Hank’s Salts

Special Media

|   |        |           |
|---|--------|-----------|
| M199 with HBSS <sup>(2)</sup><br>without L-Glutamine<br>with 0.35 g/L NaHCO <sub>3</sub>                  | 500 ml | P04-07753 |
| M199 with HBSS <sup>(2)</sup><br>with L-Glutamine<br>with 25 mM Hepes<br>with 0.35 g/L NaHCO <sub>3</sub> | 500 ml | P04-07450 |
| M199 with HBSS (10X) <sup>(2)</sup><br>without L-Glutamine<br>without NaHCO <sub>3</sub>                  | 500 ml | P04-07600 |
| <b>Powder Media</b>   |        |           |
| M199 with HBSS <sup>(1)</sup><br>with L-Glutamine   | 10 L   | P03-2110  |
| without NaHCO <sub>3</sub>  | 50 L   | P03-2150  |

| Composition      |                                       |          |
|------------------|---------------------------------------|----------|
|                  | Components                            | mg/L     |
| Inorganic Salts  | Calcium chloride x2H <sub>2</sub> O   | 185.45   |
|                  | Iron(III) nitrate x 9H <sub>2</sub> O | 0.72     |
|                  | Magnesium sulfate dried               | 139.68   |
|                  | Potassium chloride                    | 400.00   |
|                  | Potassium dihydrogen phosphate        | 60.00    |
|                  | Sodium acetate x 3H <sub>2</sub> O    | 83.00    |
|                  | Sodium chloride                       | 8,000.00 |
|                  | di-Sodium hydrogen phosphate          | 47.68    |
|                  | Adenine sulfate                       | 10.00    |
|                  | AMP                                   | 0.20     |
|                  | ATP                                   | 1.00     |
| Other Components | Cholesterol                           | 0.20     |
|                  | 2'-Deoxyribose                        | 0.50     |
|                  | D(+)-Glucose anhydrous                | 1,000.00 |
|                  | Glutathione (red.)                    | 0.05     |
|                  | Guanine x HCl                         | 0.30     |
|                  | Hepes                                 | 5,958.00 |
|                  | Hypoxanthine                          | 0.30     |
|                  | Phenol red                            | 10.00    |
|                  | D-Ribose                              | 0.50     |
|                  | Thymine                               | 0.30     |
|                  | Tween 80                              | 4.90     |
|                  | Uracil                                | 0.30     |
|                  | Xanthine                              | 0.30     |

|             |   |        |
|-------------|---|--------|
| Amino Acids | L-Alanine                                 | 25.00  |
|             | L-Arginine x HCl                          | 70.00  |
|             | L-Aspartic acid                           | 30.00  |
|             | L-Cysteine x HCl x H <sub>2</sub> O       | 0.10   |
|             | L-Cystine                                 | 20.00  |
|             | L-Glutamine                               | 100.00 |
|             | L-Glutamic acid                           | 67.00  |
|             | Glycine                                   | 50.00  |
|             | L-Histidine x HCl x H <sub>2</sub> O      | 21.88  |
|             | L-Hydroxyproline                          | 10.00  |
|             | L-Isoleucine                              | 20.00  |
|             | L-Leucine                                 | 60.00  |
|             | L-Lysine x HCl                            | 70.00  |
|             | L-Methionine                              | 15.00  |
|             | L-Phenylalanine                           | 25.00  |
|             | L-Proline                                 | 40.00  |
|             | L-Serine                                  | 25.00  |
|             | L-Threonine                               | 30.00  |
| Vitamins    | L-Tryptophan                              | 10.00  |
|             | L-Tyrosine                                | 40.00  |
|             | L-Valine                                  | 25.00  |
|             | p-Aminobenzoic acid                       | 0.05   |
|             | Ascorbic acid                             | 0.05   |
|             | D(+)-Biotin                               | 0.01   |
|             | Calciferol                                | 0.10   |
|             | D-Calcium pantothenate                    | 0.01   |
|             | Choline chloride                          | 0.50   |
|             | Folic acid                                | 0.01   |
|             | myo-Inositol                              | 0.05   |
|             | Menadione                                 | 0.01   |
|             | Nicotinic acid                            | 0.025  |
|             | Nicotinamide                              | 0.025  |
|             | Pyridoxal x HCl                           | 0.025  |
|             | Pyridoxol x HCl                           | 0.025  |
|             | Riboflavin                                | 0.01   |
|             | DL-α-Tocopherol phosphate-Na <sub>2</sub> | 0.01   |
|             | Thiamine x HCl                            | 0.01   |
|             | Vitamin A acetate                         | 0.14   |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

MEM with Earle’s Salts

Description

MEM is an advancement of the BME and the base medium of many further modifications. Because BME did not fulfil all requirements for some mammalian and HeLa cells, a better variation had to be developed. Today, MEM is one of the most used synthetic media and shows its versatility by supplementing with amino acids including Hank’s or Earle’s salts. Even the addition of only small amounts of FBS results in a positive effect on cell growth.

| Composition      |  |         |
|------------------|--|---------|
|                  | Components                                     | mg/L    |
| Inorganic Salts  | Calcium chloride x2H <sub>2</sub> O            | 264.92  |
|                  | Magnesium sulfate dried                        | 139.53  |
|                  | Potassium chloride                             | 400.00  |
|                  | Sodium chloride                                | 6800.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 140.00  |
|                  |  |         |
| Other Components | D(+)-Glucose anhydrous                         | 1000.00 |
|                  | Hepes  | 5958.00 |
|                  | Phenol red                                     | 10.00   |
| Amino Acids      | L-Alanine                                      | 8.90    |
|                  | L-Arginine x HCl                               | 126.00  |
|                  | L-Asparagine x H <sub>2</sub> O                | 13.20   |
|                  | L-Aspartic acid                                | 13.30   |
|                  | L-Cystine                                      | 24.00   |
|                  | L-Glutamine                                    | 292.00  |
|                  | L-Glutamic acid                                | 14.70   |
|                  | Glycine  | 7.50    |
|                  | L-Histidine x HCl x H <sub>2</sub> O           | 42.00   |
|                  | L-Isoleucine                                   | 52.00   |
|                  | L-Leucine                                      | 52.00   |
|                  | L-Lysine x HCl                                 | 72.50   |
|                  | L-Methionine                                   | 15.00   |
|                  | L-Phenylalanine                                | 32.00   |
|                  | L-Proline                                      | 11.50   |
|                  | L-Serine                                       | 10.50   |
|                  | L-Threonine                                    | 48.00   |
|                  | L-Tryptophan                                   | 10.00   |
|                  | L-Tyrosine                                     | 36.00   |
|                  | L-Valine                                       | 46.00   |
| Vitamins         | D-Calcium pantothenate                         | 1.00    |
|                  | Choline chloride                               | 1.00    |
|                  | Folic acid                                     | 1.00    |
|                  | myo-Inositol                                   | 2.00    |
|                  | Nicotinamide                                   | 1.00    |
|                  | Pyridoxal x HCl                                | 1.00    |
|                  | Riboflavin                                     | 0.10    |
|                  | Thiamine x HCl                                 | 1.00    |
|                  |  |         |

When 5,958.00 mg/L HEPES is included there is only 6,300.00 mg/L sodium chloride.

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



MEM with Earle’s Salts

Liquid Media with L-Glutamine

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-08500

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine  
with 1.5 g/L NaHCO<sub>3</sub>      500 ml    P04-00509

Special Media with L-Glutamine

MEM Eagle with EBSS<sup>(2)</sup>  
with L-Glutamine  
without Phenol red  
with 1.5 g/L NaHCO<sub>3</sub>      500 ml    P04-00508

MEM Eagle with EBSS<sup>(2)</sup>  
with L-Glutamine  
with 20 mM Hepes  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-08549

MEM Eagle with EBSS<sup>(2)</sup>  
with L-Glutamine  
with NEAA  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-08510

MEM Eagle with EBSS<sup>(2)</sup>  
with 2 mM Glutamine  
with 1 mM Pyruvate  
with NEAA  
with 1.5 g/L NaHCO<sub>3</sub>      500 ml    P04-08056

Powder Media with L-Glutamine

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine  
with NEAA                      10 L      P03-2910  
without NaHCO<sub>3</sub>                50L      P03-2950

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine  
with NEAA  
with 25 mM Hepes            10 L      P03-3010  
with NaHCO<sub>3</sub>                    50 L      P03-3050

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine            10 L      P03-2710  
without NaHCO<sub>3</sub>                50 L      P03-2750

MEM Eagle with EBSS<sup>(1)</sup>  
with L-Glutamine  
with 25 mM Hepes            10 L      P03-2810  
without NaHCO<sub>3</sub>                50 L      P03-2850

Liquid Media with stab. Glutamine

MEM Eagle with EBSS<sup>(1)</sup>  
with stab. Glutamine  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-09500

MEM Eagle with EBSS<sup>(1)</sup>  
with stab. Glutamine  
with 25 mM Hepes  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-08250

MEM with Hank’s Salts

Composition

|                  | Components                               | mg/L     |
|------------------|--|----------|
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O     | 185.44   |
|                  | Potassium chloride                       | 400.00   |
|                  | Potassium dihydrogen phosphate anhydrous | 60.00    |
|                  | Magnesium sulfate dried                  | 139.53   |
|                  | Sodium chloride                          | 8,000.00 |
|                  | di-Sodium hydrogen phosphate             | 47.88    |
| Other Components | D(+)-Glucose anhydrous                   | 1,000.00 |
|                  | Hepes                                    | 5,958.00 |
|                  | Phenol red                               | 10.00    |
| Amino Acids      | L-Alanine                                | 8.90     |
|                  | L-Arginine x HCl                         | 126.00   |
|                  | L-Asparagine x H <sub>2</sub> O          | 13.20    |
|                  | L-Aspartic acid                          | 13.30    |
|                  | L-Cystine                                | 24.00    |
|                  | L-Glutamine                              | 292.00   |
|                  | L-Glutamic acid                          | 14.70    |
|                  | Glycine                                  | 7.50     |
|                  | L-Histidine x HCl x H <sub>2</sub> O     | 42.00    |
|                  | L-Isoleucine                             | 52.00    |
|                  | L-Leucine                                | 52.00    |
|                  | L-Lysine x HCl                           | 72.50    |
|                  | L-Methionine                             | 15.00    |
|                  | L-Phenylalanine                          | 32.00    |
|                  | L-Proline                                | 11.50    |
|                  | L-Serine                                 | 10.50    |
|                  | L-Threonine                              | 48.00    |
|                  | L-Tryptophan                             | 10.00    |
|                  | L-Tyrosine                               | 36.00    |
|                  | L-Valine                                 | 46.00    |
| Vitamins         | D-Calcium pantothenate                   | 1.00     |
|                  | Cholin chloride                          | 1.00     |
|                  | Folic acid                               | 1.00     |
|                  | myo-Inositol                             | 2.00     |
|                  | Nicotinamide                             | 1.00     |
|                  | Pyridoxal x HCl                          | 1.00     |
|                  | Riboflavin                               | 0.10     |
|                  | Thiamine x HCl                           | 1.00     |

When 5,958.00 mg/L HEPES is included there is only 7,500.00 mg/L sodium chloride.

Special Media

MEM Eagle with HBSS<sup>(2)</sup>  
without L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-10050

MEM Eagle with HBSS<sup>(2)</sup>  
with L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-10500

MEM Eagle with HBSS<sup>(2)</sup>  
with L-Glutamine  
with 0.60 g/L NaHCO<sub>3</sub>      500 ml    P04-10599

Powder Media

MEM Eagle with HBSS<sup>(1)</sup>  
with L-Glutamine            10 L      P03-3310  
without NaHCO<sub>3</sub>                50 L      P03-3350

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

RPMI 1640

Description

The medium was developed for culture of normal and neoplastic leukocytes, but also marrow cells and hybridoma cells. Meanwhile there are better, serum-free media for hybridoma cells such our Panserin H4000. Just by supplementing RPMI 1640 with varying amounts of FBS, a very good medium for many different cell lines can be obtained.

Composition

|                   | Components                           | mg/L    |
|-------------------|--------------------------------------|---------|
| Inorganic Salts   | Calcium nitrate x 4H <sub>2</sub> O  | 100.00  |
|                   | Potassium chloride                   | 400.00  |
|                   | Magnesium sulfate anhydrous          | 48.83   |
|                   | Sodiumchloride                       | 6000.00 |
|                   | di-Sodium hydrogen phosphate         | 800.49  |
| Other Compo-nents | D(+)-Glucose anhydrous               | 2000.00 |
|                   | Glutathion (red.)                    | 1.00    |
|                   | Hepes                                | 5958.00 |
|                   | Phenol red                           | 5.00    |
| Amino Acids       | L-Arginine x HCl                     | 241.86  |
|                   | L-Asparagine x H <sub>2</sub> O      | 50.00   |
|                   | L-Aspartic acid                      | 20.00   |
|                   | L-Cystine x 2HCl                     | 65.19   |
|                   | L-Glutamine                          | 300.00  |
|                   | L-Glutamic acid                      | 20.00   |
|                   | Glycine                              | 10.00   |
|                   | L-Histidine x HCl x H <sub>2</sub> O | 20.27   |
|                   | L-Hydroxyproline                     | 20.00   |
|                   | L-Isoleucine                         | 50.00   |
|                   | L-Leucine                            | 50.00   |
|                   | L-Lysine x HCl                       | 40.00   |
|                   | L-Methionine                         | 15.00   |
|                   | L-Phenylalanine                      | 15.00   |
|                   | L-Proline                            | 20.00   |
|                   | L-Serine                             | 30.00   |
|                   | L-Threonine                          | 20.00   |
|                   | L-Tryptophan                         | 5.00    |
|                   | L-Tyrosine x 2Na                     | 28.83   |
|                   | L-Valine                             | 20.00   |
| Vitamins          | p-Aminobenzoic acid                  | 1.00    |
|                   | D-(+)-Biotin                         | 0.20    |
|                   | D-Calcium pantothenate               | 0.25    |
|                   | Choline chloride                     | 3.00    |
|                   | Folic acid                           | 1.00    |
|                   | myo-Inositol                         | 35.00   |
|                   | Nicotinamide                         | 1.00    |
|                   | Pyridoxine x HCl                     | 1.00    |
|                   | Riboflavin                           | 0.20    |
|                   | Thiamine x HCl                       | 1.00    |
|                   | Vitamin B12                          | 0.005   |

When 5,958.00 mg/L HEPES is included there is only 5,000.00 mg/L sodium chloride.

Liquid Media without Glutamine

RPMI 1640<sup>(1)</sup>  
without L-Glutamine  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17500

RPMI 1640<sup>(1)</sup>  
without L-Glutamine  
without Phenol red  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16516

RPMI 1640<sup>(1)</sup>  
without L-Glutamine  
with 25 mM Hepes  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-18000

Special Media without Glutamine

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
without Calcium  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16151

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
without L-Tryptophan  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17599

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
without Glucose  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17550

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
with 15 mM Hepes  
without Phosphate  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-21049

RPMI 1640 (10X)<sup>(2)</sup>  
without L-Glutamine  
without NaHCO<sub>3</sub>      500 ml    P04-17510

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
with 25 mM Hepes  
without NaHCO<sub>3</sub>      500 ml    P04-17850

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
with 25 mM Hepes  
with 2.2 g/L NaHCO<sub>3</sub>      500 ml    P04-22500

RPMI 1640<sup>(2)</sup>  
without L-Glutamine  
with 20 mM Hepes  
with 0.85 g/L NaHCO<sub>3</sub>      500 ml    P04-19500

RPMI 1640

Powder Media without Glutamine

RPMI 1640<sup>(1)</sup>  
without L-Glutamine      10 L      P03-7210  
without NaHCO<sub>3</sub>      50 L      P03-7250

RPMI 1640<sup>(1)</sup>  
without L-Glutamine  
without Phenol red      10 L      P03-7710  
without NaHCO<sub>3</sub>      50 L      P03-7750

RPMI 1640<sup>(1)</sup>  
without L-Glutamine  
with 25 mM Hepes      10 L      P03-4410  
without NaHCO<sub>3</sub>      50 L      P03-4450

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



RPMI 1640

Liquid Media with L-Glutamine

RPMI 1640<sup>(1)</sup>  
with L- Glutamine  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16500

RPMI 1640<sup>(1)</sup>  
with L- Glutamine  
without Phenol red  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16515

RPMI 1640<sup>(1)</sup>  
**with 2 mM L-Glutamine**  
**with 1 mM Sodium pyruvate**  
**with 4.5 g/L Glucose**  
with 10 mM Hepes  
**with 1.5 g/L NaHCO<sub>3</sub>**      500 ml    P04-18047

RPMI 1640<sup>(1)</sup>  
with L- Glutamine  
with 25 mM Hepes  
**with 2.2 g/L NaHCO<sub>3</sub>**      500 ml    P04-22100

Special Media with L-Glutamine

RPMI 1640<sup>(2)</sup>  
with L- Glutamine  
**without Glucose**  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17545

RPMI 1640<sup>(2)</sup>  
with L- Glutamine  
**without L-Arginine**  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16598

RPMI 1640<sup>(2)</sup>  
with L- Glutamine  
**without L-Tryptophan**  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17598

RPMI 1640<sup>(2)</sup>  
with L- Glutamine  
with 20 mM Hepes  
**with 0.85 g/L NaHCO<sub>3</sub>**      500 ml    P04-19550

Powder Media with L-Glutamine

RPMI 1640<sup>(1)</sup>  
with L- Glutamine            10 L      P03-4310  
without NaHCO<sub>3</sub>            50 L      P03-4350

RPMI 1640<sup>(1)</sup>  
with L- Glutamine  
with 25 mM Hepes            10 L      P03-7310  
without NaHCO<sub>3</sub>            50 L      P03-7350

RPMI 1640<sup>(1)</sup>  
with L- Glutamine  
without Phenol red            10 L      P03-7610  
without NaHCO<sub>3</sub>            50 L      P03-7650

Liquid Media with stab. Glutamine

RPMI 1640<sup>(1)</sup>  
with stab. Glutamine  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-18500

RPMI 1640<sup>(1)</sup>  
with stab. Glutamine  
with 25 mM Hepes  
**with 2.2 g/L NaHCO<sub>3</sub>**      500 ml    P04-18050

Special Media with stab. Glutamine

RPMI 1640<sup>(2)</sup>  
with stab. L- Glutamine  
without Phenol red  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16520

RPMI 1640<sup>(2)</sup>  
with stab. Glutamine  
**without Glucose**  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-17546

RPMI 1640<sup>(2)</sup>  
with stab. Glutamine  
without Phenol red  
**without Glucose**  
with 2.0 g/L NaHCO<sub>3</sub>      500 ml    P04-16530

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Schneider´s Drosophila Medium

Description

Originally developed for the culture of Drosophila cells, this medium is also suitable for the culture of other dipteran cell lines.

Liquid Media

Schneider´s Drosophila Medium<sup>(1)</sup>  
without L- Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-90500

Schneider´s Drosophila Medium<sup>(1)</sup>  
with L- Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml    P04-91500

Powder Media

Schneider´s Drosophila Medium<sup>(1)</sup>  
without L- Glutamine        10 L      P03-9310  
without NaHCO<sub>3</sub>            50 L      P03-9350

Composition

|                  | Components                         | mg/L    |
|------------------|------------------------------------|---------|
| Inorganic Salts  | Potassium chloride                 | 1600.00 |
|                  | Potassium dihydrogen phosphate     | 450.00  |
|                  | Magnesium sulfate dried            | 2585.71 |
|                  | Sodium chloride                    | 2100.00 |
|                  | di-Sodium hydrogen phosphate       | 700.00  |
| Other Components | DL-Malic acid                      | 600.00  |
|                  | Succinic acid                      | 60.00   |
|                  | Fumaric acid                       | 60.00   |
|                  | D(+)-Glucose anhydrous             | 2000.00 |
|                  | Yeast extract                      | 2000.00 |
|                  | α-Ketoglutaric acid sodium salt    | 402.66  |
|                  | D(+)-Trehalose x 2H <sub>2</sub> O | 2210.00 |
|                  |                                    |         |
| Amino Acids      | β-Alanine                          | 500.00  |
|                  | L-Arginine Base                    | 600.00  |
|                  | L-Asparatic acid                   | 400.00  |
|                  | L-Cysteine free base               | 60.00   |
|                  | L-Cystine                          | 16.60   |
|                  | L-Glutamine                        | 1800.00 |
|                  | L-Glutamic acid                    | 800.00  |
|                  | Glycine                            | 250.00  |
|                  | L-Histidine Base                   | 400.00  |
|                  | L-Isoleucine                       | 150.00  |
|                  | L-Leucine                          | 150.00  |
|                  | L-Lysine x HCl                     | 1650.00 |
|                  | L-Methionine                       | 150.00  |
|                  | L-Proline                          | 1700.00 |
|                  | L-Serine                           | 250.00  |
|                  | L-Threonine                        | 350.00  |
|                  | L-Tryptophan                       | 100.00  |
|                  | L-Tyrosine                         | 500.00  |
|                  | L-Valine                           | 300.00  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



TC 100 Insect Medium

**Description**  
The TC 100 Insect Medium is an absolutely serum-free formula (Oxford formulation) for the growth of insect cells, especially for SF9 cells and the breeding of viruses. If you would like to work with a modern protein-free insect medium, our Spodopan is the ideal choice.

Liquid Media

TC 100 Insect Medium<sup>(1)</sup>  
with L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml   P04-92500

Special Media

TC 100 Insect Medium<sup>(2)</sup>  
without L-Glutamine  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml   P04-93500

Powder Media

TC 100 Insect Medium<sup>(1)</sup>  
with L-Glutamine              10 L      P03-9610  
without NaHCO<sub>3</sub>                50 L      P03-9650

| Composition      |  |         |
|------------------|--|---------|
|                  | Components                                     | mg/L    |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O           | 1298.13 |
|                  | Potassium chloride                             | 2900.00 |
|                  | Magnesium chloride x 6H <sub>2</sub> O         | 2282.59 |
|                  | Magnesium sulfate dried                        | 1781.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 970.00  |
|                  |  |         |
| Other Components | D(+)-Glucose anhydrous                         | 1000.00 |
|                  | Bacto - Tryptose                               | 2600.00 |
| Amino Acids      | L-Alanine                                      | 225.00  |
|                  | L-Arginine Base                                | 550.00  |
|                  | L-Aspartic acid                                | 350.00  |
|                  | L-Asparagine x H <sub>2</sub> O                | 391.97  |
|                  | L-Cystine                                      | 20.00   |
|                  | L-Glutamine                                    | 600.00  |
|                  | L-Glutamic acid                                | 600.00  |
|                  | Glycine  | 650.00  |
|                  | L-Histidine x HCl x H <sub>2</sub> O           | 3400.00 |
|                  | L-Isoleucine                                   | 50.00   |
|                  | L-Leucine                                      | 75.00   |
|                  | L-Lysine x HCl                                 | 630.00  |
|                  | L-Methionine                                   | 50.00   |
|                  | L-Phenylalanine                                | 150.00  |
|                  | L-Proline                                      | 350.00  |
|                  | L-Serine                                       | 550.00  |
|                  | L-Threonine                                    | 180.00  |
|                  | L-Tryptophan                                   | 100.00  |
|                  | L-Tyrosine                                     | 55.00   |
|                  | L-Valine                                       | 100.00  |
| Vitamins         | p-Amino benzoic acid                           | 0.02    |
|                  | D-(+)-Biotin                                   | 0.01    |
|                  | D-Calcium pantothenate                         | 0.11    |
|                  | Folic acid                                     | 0.02    |
|                  | myo-Inositol                                   | 0.02    |
|                  | Nicotinic acid                                 | 0.02    |
|                  | Pyridoxine x HCl                               | 0.02    |
|                  | Riboflavin                                     | 0.02    |
|                  | Thiamine x HCl                                 | 0.02    |
|                  | Vitamin B12                                    | 0.01    |
|                  |  |         |
|                  |  |         |
|                  |  |         |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



TNM-FH Medium

**Description**  
The TNM-FH is a variation of the Grace medium. This modification has proved as a good culture medium for many lepidopteran cells.

Liquid Media

TNM-FH Medium<sup>(1)</sup>  
with L-Glutamine  
with Lactalbumine-Hydrolysate  
with Yeast extract  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml   P04-80500

Special Media

TNM-FH Medium<sup>(2)</sup>  
with L-Glutamine  
with Lactalbumin-Hydrolysate  
with Yeast extract  
**with 10 % Fetal Bovine Serum**  
with 0.35 g/L NaHCO<sub>3</sub>      500 ml   P04-83500

Powder Media

TNM-FH Insect Medium<sup>(1)</sup>  
without L-Glutamine  
with Lactalbumine-Hydrolysate  
with Yeast extract              10 L      P03-9710  
without NaHCO<sub>3</sub>                50 L      P03-9750

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



| Composition      |  |           |
|------------------|--|-----------|
|                  | Components                             | mg/L      |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O   | 1,324.62  |
|                  | Potassium chloride                     | 2,240.00  |
|                  | Magnesium chloride x 6H <sub>2</sub> O | 2,278.86  |
|                  | Magnesium sulfate dried                | 1,939.80  |
|                  | di-Sodium hydrogen phosphate           | 876.92    |
|                  |  |           |
| Other Components | DL-Malic acid                          | 670.00    |
|                  | Succinic acid                          | 60.00     |
|                  | D-Fructose                             | 400.00    |
|                  | Fumaric acid                           | 55.00     |
|                  | D(+)-Glucose anhydrous                 | 700.00    |
|                  | Yeast extract                          | 3,333.33  |
|                  | α-Ketoglutaric acid sodium salt        | 425.66    |
|                  | Lactalbumin Hydrolysate                | 3,333.33  |
|                  | Sucrose                                | 26,680.00 |
|                  |  |           |
| Amino Acids      | β-Alanine                              | 200.00    |
|                  | L-Alanine                              | 225.00    |
|                  | L-Arginine x HCl                       | 700.00    |
|                  | L-Asparagine x H <sub>2</sub> O        | 350.00    |
|                  | L-Aspartic acid                        | 350.00    |
|                  | L-Cystine                              | 19.18     |
|                  | L-Glutamine                            | 600.00    |
|                  | L-Glutamic acid                        | 600.00    |
|                  | Glycine                                | 650.00    |
|                  | L-Histidine Base                       | 2,500.00  |
|                  | L-Isoleucine                           | 50.00     |
|                  | L-Leucine                              | 75.00     |
|                  | L-Lysine x HCl                         | 625.00    |
|                  | L-Methionine                           | 50.00     |
|                  | L-Phenylalanine                        | 150.00    |
|                  | L-Proline                              | 350.00    |
|                  | L-Serine                               | 550.00    |
|                  | L-Threonine                            | 175.00    |
|                  | L-Tryptophan                           | 100.00    |
|                  | L-Tyrosine                             | 50.00     |
|                  | L-Valine                               | 100.00    |
| Vitamins         | p-Aminobenzoic acid                    | 0.02      |
|                  | D-(+)-Biotin                           | 0.01      |
|                  | D-Ca-Pantothenate                      | 0.02      |
|                  | Cholin chloride                        | 0.20      |
|                  | Folic acid                             | 0.02      |
|                  | myo-Inositol                           | 0.02      |
|                  | Nicotinic acid                         | 0.02      |
|                  | Pyridoxol x HCl                        | 0.02      |
|                  | Riboflavin                             | 0.02      |
|                  | Thiamine x HCl                         | 0.02      |
|                  |  |           |
|                  |  |           |
|                  |  |           |



Waymouth’s MB 752/1 Medium

**Description**  
Waymouth’s MB 752/1 Medium was developed for studies concerning nutrition and metabolism. It also can be used for growing strain L sub-lines, NCTC clone 929.

**Special Media**

Waymouth’s MB 752/1 Medium<sup>(2)</sup>  
with L-Glutamine                    10 L     P03-4510  
with 2.24 g/L NaHCO<sub>3</sub>            500 ml   P04-28500

**Powder Media**

Waymouth’s MB 752/1 Medium<sup>(1)</sup>  
with L-Glutamine                    10 L     P03-4510  
without NaHCO<sub>3</sub>                    50 L     P03-4550

| Composition      |  |          |
|------------------|--|----------|
|                  | Components                             | mg/L     |
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O   | 120.02   |
|                  | Magnesium chloride x 6H <sub>2</sub> O | 240.00   |
|                  | Magnesium sulfate dried                | 130.96   |
|                  | Potassium chloride                     | 150.00   |
|                  | Potassium dihydrogen phosphate         | 80.00    |
|                  | Sodium chloride                        | 6,000.00 |
|                  | di-Sodium hydrogen phosphate anhydrous | 300.00   |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                 | 5,000.00 |
|                  | Glutathione (red.)                     | 15.00    |
|                  | Hepes                                  | 4,766.40 |
|                  | Hypoxanthine                           | 25.00    |
|                  | Phenol red                             | 10.00    |
| Amino Acids      | L-Arginine x HCl                       | 75.00    |
|                  | L-Aspartic acid                        | 60.00    |
|                  | L-Cysteine x HCl x H <sub>2</sub> O    | 100.26   |
|                  | L-Cystine                              | 15.00    |
|                  | L-Glutamine                            | 350.00   |
|                  | L-Glutamic acid                        | 150.00   |
|                  | Glycine                                | 50.00    |
|                  | L-Histidine x HCl x H <sub>2</sub> O   | 164.10   |
|                  | L-Isoleucine                           | 25.00    |
|                  | L-Leucine                              | 50.00    |
|                  | L-Lysine x HCl                         | 240.00   |
|                  | L-Methionine                           | 50.00    |
|                  | L-Phenylalanine                        | 50.00    |
|                  | L-Proline                              | 50.00    |
|                  | L-Threonine                            | 75.00    |
|                  | L-Tryptophan                           | 40.00    |
|                  | L-Tyrosine                             | 40.00    |
|                  | L-Valine                               | 65.00    |
| Vitamins         | L-Ascorbic acid                        | 17.50    |
|                  | D(+)-Biotin                            | 0.02     |
|                  | D-Calcium pantothenate                 | 1.00     |
|                  | Choline chloride                       | 250.00   |
|                  | Folic acid                             | 0.40     |
|                  | myo-Inositol                           | 1.00     |
|                  | Nicotinamide                           | 1.00     |
|                  | Pyridoxine x HCl                       | 1.00     |
|                  | Riboflavin                             | 1.00     |
|                  | Thiamine x HCl                         | 10.00    |
|                  | Vitamin B12                            | 0.20     |
|                  |  |          |
|                  |  |          |

When 4,766.40 mg/L HEPES is included there is only 5,500.00 mg/L sodium chloride.

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



William’s Medium E

**Description**  
The William’s Medium E is used for long-term cultivation of adult rat liver epithelial cells.

**Liquid Media**

William’s Medium E<sup>(1)</sup>  
without L-Glutamine                    500 ml   P04-29050  
with 2.24 g/L NaHCO<sub>3</sub>

William’s Medium E<sup>(1)</sup>  
with L-Glutamine                    500 ml   P04-29500  
with 2.24 g/L NaHCO<sub>3</sub>

William’s Medium E<sup>(1)</sup>  
with stab. Glutamine                    500 ml   P04-29150  
with 2.24 g/L NaHCO<sub>3</sub>

William’s Medium E<sup>(1)</sup>  
without L-Glutamine                    500 ml   P04-29510  
without Phenol red  
with 2.24 g/L NaHCO<sub>3</sub>

**Special Media**

William’s Medium E<sup>(2)</sup>  
without L-Glutamine                    500 ml   P04-29050S1  
without Glucose  
with 2.24 g/L NaHCO<sub>3</sub>

**Powder Media**

William’s Medium E<sup>(1)</sup>  
with L-Glutamine                    10 L     P03-4810  
with 25 mM Hepes                    50 L     P03-4850  
without NaHCO<sub>3</sub>

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Composition

|                  | Components                                     | mg/L     |
|------------------|--|----------|
| Inorganic Salts  | Calcium chloride x 2H <sub>2</sub> O           | 264.92   |
|                  | Iron(III)-nitrat x 9H <sub>2</sub> O           | 0.0001   |
|                  | Potassium chloride                             | 400.00   |
|                  | Copper(II)-sulfate x 5H <sub>2</sub> O         | 0.0001   |
|                  | Magnesium sulfate dried                        | 139.57   |
|                  | Manganese chloride x 4H <sub>2</sub> O         | 0.0001   |
|                  | Sodium chloride                                | 6,800.00 |
|                  | Sodium dihydrogen phosphate x H <sub>2</sub> O | 140.00   |
|                  | Zinc sulfate x 7H <sub>2</sub> O               | 0.0002   |
|                  |  |          |
| Other Components | D(+)-Glucose anhydrous                         | 2,000.00 |
|                  | Hepes  | 5,958.00 |
|                  | Glutathion (red.)                              | 0.05     |
|                  | Methylinoleat                                  | 0.03     |
|                  | Sodium pyruvate                                | 25.00    |
|                  | Phenol red                                     | 10.00    |
| Amino Acids      | L-Alanine                                      | 90.00    |
|                  | L-Arginine free base                           | 50.00    |
|                  | L-Asparagine x H <sub>2</sub> O                | 20.00    |
|                  | L-Aspartic acid                                | 30.00    |
|                  | L-Cysteine                                     | 40.00    |
|                  | L-Cystine                                      | 20.00    |
|                  | L-Glutamine                                    | 292.00   |
|                  | L-Glutamic acid                                | 50.00    |
|                  | Glycine  | 50.00    |
|                  | L-Histidine Base                               | 15.00    |
|                  | L-Isoleucine                                   | 50.00    |
|                  | L-Leucine                                      | 75.00    |
|                  | L-Lysine x HCl                                 | 87.50    |
|                  | L-Methionine                                   | 15.00    |
|                  | L-Phenylalanine                                | 25.00    |
|                  | L-Proline                                      | 30.00    |
|                  | L-Serine                                       | 10.00    |
|                  | L-Threonine                                    | 40.00    |
| Vitamins         | L-Tryptophan                                   | 10.00    |
|                  | L-Tyrosine                                     | 35.00    |
|                  | L-Valine                                       | 50.00    |
|                  |  |          |
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|                  |  |          |
|                  |  |          |
| Vitamins         | L-Ascorbic acid                                | 2.00     |
|                  | D(+)-Biotin                                    | 0.50     |
|                  | Calciferol                                     | 0.10     |
|                  | D-Calcium pantothenate                         | 1.00     |
|                  | Choline chloride                               | 1.50     |
|                  | Folic acid                                     | 1.00     |
|                  | myo-Inositol                                   | 2.00     |
|                  | Menadion sodium bisulfite                      | 0.01     |
|                  | Nikotinamid                                    | 1.00     |
|                  | Pyridoxal x HCl                                | 1.00     |
|                  | Riboflavin                                     | 0.10     |
|                  | Thiamine x HCl                                 | 1.00     |
|                  | DL-α-Tocopherol phosphate-Na <sub>2</sub>      | 0.01     |
|                  | Vitamin A acetate                              | 0.10     |
|                  | Vitamin B12                                    | 0.20     |
|                  |  |          |
|                  |  |          |

When 5,958.00 mg/L HEPES is included there is only 6,300.00 mg/L sodium chloride.

Endopan

**Background**  
Endothelial cells line the blood and lymphatic vessels and the internal cavities of the heart. They display a strongly flattened, polygonal form and mostly rest on a basal membrane. They adhere to each other by desmosomes and tight-junctions.

With a total cell number of about one trillion (10<sup>12</sup>), the endothelium is one of the biggest organs of the body and plays a key role in many physiological and patho-physiological processes (e.g. cell-based immune response, wound healing, inflammation, allergy, cardiovascular diseases, tumour growth). A huge number of soluble factors circulating in the blood or released by neighbouring cells, control proliferation or apoptosis of endothelial cells and the invasion and migration of leucocytes to the endothelium, thereby regulating the maintenance, degeneration, or regeneration of blood vessels.

The endothelium constitutes a highly specialized organ that lines the vascular system and lymphatic channels in a complex network of arteries, veins, and micro-vessels which differ in size, structure, and function. The cultivation of endothelial cells from large vessels, predominantly from human umbilical vein, is a routine procedure in many laboratories, and this has contributed huge to the development of modern vascular biology. However, there is convincing evidence that micro-vascular endothelial cells display a number of important functional differences, compared to large vessel-derived

endothelial cells, with regard to their growth factor response and their regulation of adhesion molecule expression.

They serve as the barrier separating circulating blood from the extracellular matrix and interstitium in the body. Cells involved in the pathogenesis of tumor angiogenesis, wound healing, and acute or chronic inflammation are predominantly of micro-vascular origin. Several functions associated with the micro-vasculature in situ are expressed by micro-vascular endothelial cells in cell culture.

Micro-vessels are not simply tubes but have also a second cellular component, the mural cell or pericyte. Little is known about later stages of vessel growth, including the addition of pericytes to the capillary and its influence on endothelial growth and function. In vivo, pericytes form an incomplete envelopment around the endothelial cells within the micro-vascular basement membrane of capillaries and post-capillary venules.

Evidence clearly indicates that differences exist between endothelial cells of the microvasculature and those that line large vessels. These include differences in secreted products, in the expression of cell adhesion molecules, and in cytokine-induced regulation of cell adhesion molecules. Thus, a precise delineation of the biology of micro-vascular endothelial cells is crucial to our understanding of such important processes as inflammation, tumor progression, cardiac microcirculation, and blood-brain barrier function.

Endopan 3  
Large Vessel Endothelial Cell Medium

|   |        |           |
|---|--------|-----------|
| Endopan 3 ready-to-use <sup>(1)</sup>           | 500 ml | P04-00100 |
| Endopan 3 kit with 9 supplements <sup>(1)</sup> | 500 ml | P04-0010K |

**Composition**  
Endopan 3 ready-to-use is a specially developed medium for the in vitro culture of human endothelial cells containing all components necessary for optimal growth. It is designed for use in an incubator at 37° C with a 5% CO2 atmosphere.

Endopan 3 kit is provided with FBS and supplements in separate sterile packing. This will enable the user to prepare a medium for special application. For example, FBS, VEGF, FGF-2, or other components may be omitted from the complete medium for specific experimental settings.

Endopan MV  
Microvascular Endothelial Cell Medium

|  |        |           |
|--|--------|-----------|
| Endopan MV ready-to-use <sup>(3)</sup>           | 500 ml | P04-00200 |
| Endopan MV kit with 8 supplements <sup>(3)</sup> | 500 ml | P04-0020K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



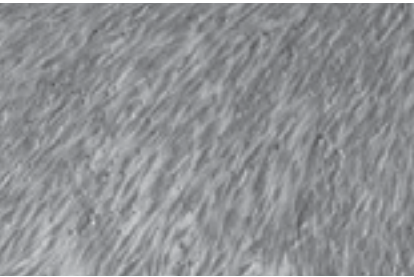
Endopan PRO  
Endothelial Progenitor Medium

**Background**  
Endothelial cells line blood and lymphatic vessels and the internal cavities of the heart. They display a strongly flattened, polygonal form and mostly rest on a basal membrane. With a total number of about 10<sup>12</sup> cells, the endothelium is one of the biggest organs of the body and plays a key role in many physiological and patho-physiological processes. A number of factors control proliferation or apoptosis of endothelial cells, thereby regulating the maintenance, degeneration, or regeneration of blood vessels.

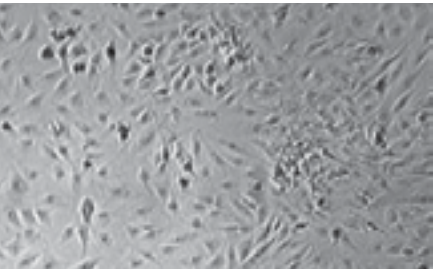
New blood vessel formation occurs via angiogenesis or vasculogenesis, a process thought to be restricted to embryonic development. In 1997, postnatal vasculogenesis has been proposed as an important mechanism for angiogenesis via blood or bone marrow derived circulating progenitor endothelial cells (PEC) (Asahara et al, Science 1997). Consequently, PECs have been extensively studied as a potential cell therapy for the repair of damaged blood vessels. Animal studies clearly demonstrated that administration of PECs partially rescued cardiovascular dysfunction or myocardial injury with evidence for PEC contribution to new vessel growth. In most studies, PECs are defined by cell surface expression of CD34, CD133, or VEGF-R2 (KDR). Because these molecules are also present on hematopoietic progenitors, relying only on surface markers can not exclude a contamination with hematopoietic lineage cells. More recently, a PEC population has been identified which shows expression of endothelial as well as progenitor, but not hematopoietic cell markers (Ingram et al, Blood. 2004;104:2752). Importantly, these cells have been tested for a high proliferative potential in clonogenic assays and additionally characterized by formation of functional blood vessels in vivo (Yoder et al, Blood. 2007;109:1801).

**Composition**  
Endopan PRO ready-to-use is a complete medium specially developed for the in vitro culture of human progenitor endothelial cells (hPEC) containing all components necessary for optimal colony formation, clonogenic growth, and rapid proliferation.

Endopan PRO kit is provided with FBS growth supplement (pre-screened and tested for progenitor cells) and additional supplements in separate sterile packing. This will enable the user to prepare a medium for special application.



hPEC in Endopan PRO (P6)



hPEC colony (P1) with outgrowing cells in Endopan PRO

|   |        |           |
|---|--------|-----------|
| Endopan PRO ready-to-use <sup>(3)</sup>           | 500 ml | P04-00700 |
| Endopan PRO kit with 6 supplements <sup>(3)</sup> | 500 ml | P04-0070K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Pantum

**Description**  
Pantum are ready-to-use growth media which contain purified plasma proteins and lipids, such as serum albumin and cholesterol, specific growth factors, components of soybean extract, an iron transport protein and enriched trace elements. The new formulations result in stable cell growth under defined culture conditions. No addition of serum or growth factors is necessary.

**Pantum 386 for epithelial cells**  
Pantum 386 is a modified formulation of DMEM and specially developed to optimize the growth of epithelial cell lines.

**Pantum 586A for adherent cells**  
Pantum 586A is particularly suited for culture of adherent cells to stimulate their growth. It is a modification of Iscove’s MEM.

**Pantum L24 for lymphocytes**  
Pantum L24 is suited for culture of peripheral blood lymphocytes. Adult lymphocytes lack the ability to proliferate. Therefore, Pantum L24 contains a mitogen (phytohemagglutinin, PHA) specifically acting on the cell cycle. It is a modified formulation of RPMI 1640.

**Pantum T64 for tumor cells**  
Pantum T64 is specially developed for culture of tumor cells to stimulate the growth of this cell type. It is a modification of RPMI 1640.

|                            |        |           |     |
|----------------------------|--------|-----------|-----|
| Pantum 386 <sup>(3)</sup>  | 500 ml | P04-00386 | NEW |
| Pantum 586A <sup>(3)</sup> | 500 ml | P04-00586 | NEW |
| Pantum L24 <sup>(3)</sup>  | 500 ml | P04-00024 | NEW |
| Pantum T64 <sup>(3)</sup>  | 500 ml | P04-00064 | NEW |

Hepatopan  
Human Hepatocyte Medium

**Description**  
Like every human organ, the liver consists of a complicated compound of different cells with varying functions. Hepatocytes represent – in terms of figures – with 75 % of the total number of liver cells the most important component. The metabolism, this means the chemical transformation of almost all substances which are taken in by the body, takes place in the liver.

**Composition**  
The hepatocyte medium from PAN-Biotech is supplied as a basal medium with four supplements (storage of the supplements at -20° C). The supplements have to be added to the medium before use. The medium does not contain fetal bovine serum.

|   |        |           |
|---|--------|-----------|
| Hepatopan with 4 supplements <sup>(3)</sup> | 500 ml | P04-00600 |
|---|--------|-----------|

Melanopan  
Melanocyte Medium

**Description**  
Melanocytes are embedded in the basal and spike cell layer of the epidermis. They produce the pigment melanin and take care of the protective function of the skin against UV damages. If the solar radiation is too strong, the melanocytes are damaged and can develop into tumour cells.

**Composition**  
The melanocyte growth medium from PAN-Biotech is supplied as a basal medium with seven supplements (storage of the supplements at -20° C). The supplements have to be added to the medium before use. The medium does not contain fetal bovine serum.

|   |        |            |
|---|--------|------------|
| Melanopan with 7 supplements <sup>(3)</sup> | 500 ml | P04-740500 |
|---|--------|------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Neuropan  
Neuronal Cell Medium

**Neuropan Basal Medium**  
Neuropan basal medium supports the growth of hippocampus cells and many other neuronal cells of the central nervous system. A feeder layer of astrocytes is not required. Neuropan basal medium does not contain glutamate which should be added for the initial culture (25 µM). Before use, Neuropan basal medium is supplemented with serum or for a serum-free culture with Neuropan 27 or NS21 Supplement.

**Neuropan 27** is a concentrate for the serum-free cultivation of neural cells.

**NS21 Supplement**  
To culture neurons in the absence of serum, defined supplements such as B27 are widely used. However, available supplements exhibit some variability in their capability to support neurons in culture. NS21 Supplement is a newly developed serum substitute for neuronal cultures of cells from the central and peripheral nervous system.

|   |                 |                        |
|---|-----------------|------------------------|
| Neuropan-Basal Media (Basicmedia) <sup>(2)</sup>              | 500 ml          | P04-00900              |
| Neuropan 27 supplement 20x <sup>(2)</sup>                     | 100 ml<br>10 ml | P07-07100<br>P07-07010 |
| Neuropan 27 supplement 50x <sup>(2)</sup>                     | 100 ml<br>10 ml | P07-07200<br>P07-07210 |
| Neuropan 27 supplement 20x without Antioxidant <sup>(2)</sup> | 100 ml<br>10 ml | P07-10100<br>P07-10010 |
| Neuropan 2 supplement 100x <sup>(2)</sup>                     | 100 ml<br>10 ml | P07-11100<br>P07-11010 |
| NS21 Supplement 50x sterile <sup>(3)</sup>                    | 10 ml           | P07-20021              |
| NS21 Supplement 50x non-sterile <sup>(3)</sup>                | 10 ml           | P07-20001              |

Stempan  
ES-Cell Medium

**Description**  
Stem cells are non-specialized cells with the ability (potency) to develop into different organo-typic cell types (e. g. heart, nerve, blood, muscle and cartilage cells). Depending on their origin, they are divided into embryonic and adult stem cells.

**Composition**  
For the cultivation of embryonic stem cells, PAN-Biotech has developed a complete ready-to-use medium. The medium contains fetal bovine serum.

|   |        |           |
|---|--------|-----------|
| Stempan DMEM <sup>(2)</sup> with L-Glutamine with 3.7 g/L NaHCO <sub>3</sub> without LIF  | 500 ml | P08-50500 |
| Stempan GMEM <sup>(2)</sup> with L-Glutamine with 2.75 g/L NaHCO <sub>3</sub> without LIF | 500 ml | P08-50600 |

EMEM Fibroblasts  
Fibroblast Medium

**Description**  
Based on EMEM, this medium was supplemented with amino acids and vitamins and optimized for an improved growth of fibroblasts.

For the cultivation of fibroblasts, this medium has to be supplemented with 10% FBS before use.

|                                 |        |           |
|---------------------------------|--------|-----------|
| EMEM Fibroblasts <sup>(1)</sup> | 500 ml | P04-08049 |
|---------------------------------|--------|-----------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request





Amniopan  
Prenatal Cytogenetics Medium

Description

Amniopan is a complete ready-to-use medium intended for in vitro diagnostic use with a short term culture of human fetal cells from amniotic fluid or chorion villi biopsy (CVS) material for a standardized application in cytogenetic studies. Amniopan is intended for in vitro use and has been designed for establishing cultures of human fetal cells from amniotic fluid or chorion villi biopsies (CVS), which then can be used in karyotyping, fluorescence in-situ hybridisation (FISH) or other cytogenetic procedures. The media formulation of Amniopan was optimized on human fetal cells from amniotic fluid and CVS, with special emphasis on fast attachment of cells to the cell culture substrate and efficient cell growth to facilitate rapid diagnostic findings.

Composition

Amniopan is supplied frozen as a complete medium, ready-to-use in a 100 ml format. It is based on alpha-MEM and contains antibiotics, L-glutamine, foetal bovine serum (FBS), hormones and growth factors.

Suitability

Amniopan is a complete medium (ready-to-use) for the cultivation of human fetal cells from amniotic fluid and chorion villi biopsy samples. It is suitable for a rapid expansion of amniotic cells in order to investigate chromosomal disorders. The number and quality of metaphases in Amniopan are significantly higher and independent of individual batches as compared to other media.

|                         |        |           |
|-------------------------|--------|-----------|
| Amniopan <sup>(1)</sup> | 100 ml | P04-70100 |
|-------------------------|--------|-----------|

Amniopan S2  
Prenatal Cytogenetics Medium

Description

Amniopan S2 is a complete ready-to-use medium intended for in vitro diagnostic use with a short term culture of human fetal cells from amniotic fluid or chorion villi biopsy (CVS) material for a standardized application in cytogenetic studies. Amniopan S2 is intended for in vitro use and has been designed for establishing cultures of human fetal cells from amniotic fluid or chorion villi biopsies (CVS), which then can be used in karyotyping, fluorescence in-situ hybridisation (FISH) or other cytogenetic procedures. The media formulation of Amniopan S2 was further optimized on human fetal cells from amniotic fluid and CVS, with special emphasis on fast attachment of cells to the cell culture substrate and efficient cell growth to facilitate rapid diagnostic findings.

Composition

Amniopan S2 is supplied frozen as a complete medium, ready-to-use in a 100 ml format. It is based on alpha-MEM and contains antibiotics, L-glutamine, fetal bovine serum (FBS), hormones and an increased amount of growth factors.

Suitability

Amniopan S2 is a ready-to-use medium for the cultivation of human fetal cells from amniotic fluid and chorion villi biopsy samples. It is suitable for a rapid expansion of amniotic cells in order to investigate chromosomal disorders. The number and quality of metaphases in Amniopan S2 are significantly higher and independent of individual batches as compared to other media.

|                            |        |                      |
|----------------------------|--------|----------------------|
| Amniopan S2 <sup>(1)</sup> | 100 ml | P04-70101 <b>NEW</b> |
|----------------------------|--------|----------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Marrowpan  
Marrow Cell Medium

Description

Marrowpan is a complete ready-to-use medium intended for in vitro diagnostic procedures with a short term culture of bone marrow and other hematopoietic cells for cytogenetic studies. Marrowpan is intended for in vitro use and has been designed for establishing cultures of bone marrow and leukemic blood cells, which then can be used in karyotyping, fluorescence in-situ hybridisation (FISH) or other cytogenetic procedures. Marrowpan can be used as a neutral medium to culture different haematopoietic cells (myeloid and lymphoid lineages) present in bone marrow or leukemic blood samples. Marrowpan is also used together with a mitogen specific for B or T lymphocytes where these particular lineages are being investigated.

Composition

Marrowpan is supplied frozen as a complete medium, ready-to-use in a 100 ml format. It is based on alpha-MEM and contains antibiotics, L-glutamine, fetal bovine serum (FBS), hormones and growth factors.

Suitability

Marrowpan is a complete medium (ready-to-use) for the cultivation of cells from peripheral blood or bone marrow. It is suitable for a rapid expansion of blood cells in order to investigate leukemic diseases (e.g. ALL, AML, CLL, CML, MPN, MDS). The number and quality of metaphases in Marrowpan are significantly higher and independent of individual batches as compared to serum-containing media.

|                          |        |           |
|--------------------------|--------|-----------|
| Marrowpan <sup>(1)</sup> | 100 ml | P04-70200 |
|--------------------------|--------|-----------|

Marrowpan S2  
Marrow Cell Medium

Description

Marrowpan S2 is a complete ready-to-use medium intended for in vitro diagnostic procedures with a short term culture of bone marrow and other hematopoietic cells for cytogenetic studies. Marrowpan S2 is intended for in vitro use and has been designed for establishing cultures of bone marrow and leukemic blood cells, which then can be used in karyotyping, fluorescence in-situ hybridisation (FISH) or other cytogenetic procedures. Marrowpan S2 can be used as a neutral medium to culture different haematopoietic cells (myeloid and lymphoid lineages) present in bone marrow or leukemic blood samples. Marrowpan S2 is also used together with a mitogen specific for B or T lymphocytes where these particular lineages are being investigated.

Composition

Marrowpan S2 is supplied frozen as a complete medium, ready-to-use in a 100 ml format. It is based on alpha-MEM and contains antibiotics, L-glutamine, Foetal Bovine Serum (FBS), hormones and an increased amount of growth factors.

Suitability

Marrowpan S2 is a ready-to-use medium for the cultivation of cells from peripheral blood or bone marrow. It is suitable for a rapid expansion of blood cells in order to investigate leukemic diseases (e.g. ALL, AML, CLL, CML, MPN, MDS). The number and quality of metaphases in Marrowpan S2 are significantly higher and independent of individual batches as compared to serum-containing media.

|                             |        |           |
|-----------------------------|--------|-----------|
| Marrowpan S2 <sup>(1)</sup> | 100 ml | P04-70201 |
|-----------------------------|--------|-----------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request





## Serum-free Stem Cell Media

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## Introduction

Research and development in the field of stem cell biology has been tremendously advanced in the last decade. Today, some cell types are used in clinical studies or applications, and several more are close to being employed in cellular therapy. One important aspect for any application of stem and progenitor cells in patients is the isolation and expansion of these cells under defined conditions. For this purpose, the presence of FBS in cell cultures is undesirable. PAN-Biotech is offering a full range of serum-free media for stem and progenitor cells for the most important fields of research and development. Some of these stem cell media are free of animal-derived components, enabling the culture of cells in conditions close to clinical application.

In addition to hematopoietic stem and progenitor cells, also other types of stem and progenitor cells (e.g. mesenchymal stem cells, endothelial progenitor cells, and very small embryonic-like stem cells) circulate under steady-state conditions at detectable levels in peripheral blood, with their numbers increasing in response to stress, inflammation, tissue organ injury (e.g. myocardial infarction, stroke, or colitis), or mobilizing agents (e.g. colony-stimulating factors, G-CSF, GM-CSF).

Human mesenchymal stem stells (hMSC) have gained attention as one of very few cell types used clinically for cell therapy and tissue engineering due to their immuno-modulatory as well as their regenerative potential. MSC can be isolated from various sources: e.g. bone marrow, adipose tissue, or human umbilical cord. MSC have the capability to differentiate in vitro into connective tissue cells such as adipocytes, chondrocytes, and osteoblasts.

The umbilical cord has been the most popular source for easy to obtain stem cells. Hematopoietic stem cells harvested from cord blood have been successfully used for the treatment of diseases. Stem cell populations have also been reported in other compartments of the umbilical cord, amnion, sub-amnion, perivascular region, Wharton's jelly, umbilical blood vessel adventitia and endothelium. Some differences in stemness characteristics between compartments have been found. New blood vessel formation occurs via angiogenesis or vasculogenesis, a process thought to be restricted to embryonic development. In 1997, postnatal vasculogenesis has been proposed as an important mechanism for angiogenesis via blood or bone marrow-derived circulating progenitor endothelial cells (PEC) (Asahara et al. Science). From thereon, PECs have been extensively studied as potential cell therapy for the

repair of damaged blood vessels. Animal studies clearly demonstrated that administration of PECs partially rescued cardiovascular dysfunction or myocardial injury. Embryonic stem cells (ESCs) derived from the inner cell mass of a blastocyst are pluripotent stem cells with unique properties of self-renewal. ESCs can divide indefinitely in vitro, while maintaining the capacity to generate all cell types of an adult organism. The unique identity of ESCs is governed by a network of transcriptional factors along with epigenetic factors. The epigenetic status of ESCs features an open chromatin structure with characteristic histone and DNA modification profiles.

Somatic cells can acquire ESC properties through nuclear reprogramming. Three major approaches, including somatic cell nuclear transfer, cell fusion, and forced introduction of defined transcription factors have been established to reprogram somatic cells to pluripotency. The latter approach was first reported by Yamanaka et al. in 2006, who demonstrated that the expression of combined transcription factors, Oct4, Sox2, Klf4 and c-Myc is reprogramming somatic cells into ESC-like cells, termed induced pluripotent stem cells (iPS cells). Since this initial report, the technology has attracted great attention and motivated numerous investigations because of its tremendous potential for regenerative medicine. IPS cells have been shown to be highly similar to ESCs, in terms of transcription programs, chromatin modification profiles and global chromatin configuration. Functionally, at least some of the iPS cells have a developmental potential equivalent to ESCs in many aspects, such as the expression of certain stem cell genes and proteins, chromatin methylation patterns, doubling time, embryoid body and teratoma formation, viable chimera formation, and potency and differentiability. The full extent of their relation to natural pluripotent stem cells is still being assessed.

Already, iPSCs are a widely accepted advance in stem cell research, as they may allow researchers to obtain pluripotent stem cells for therapeutic application, without the controversial use of embryos. Because iPS cells can be developed from a patient's own somatic cells, it is believed that treatment of iPS cells would avoid immunogenic responses. IPS cells have become an alternative cell source for transplantation.

Stem and progenitor cells as well as induced pluripotent stem cells are thus attractive autologous or allogenic agents for the treatment of malignant and non-malignant hematopoietic and non-hematopoietic disorders.

Product Numbers

|   |                          |                          |
|---|--------------------------|--------------------------|
| PowerStem ESPro1 with LIF <sup>(3)</sup>    | 100 ml Kit<br>500 ml Kit | P04-7701K<br>P04-77010K  |
| PowerStem ESPro1 without LIF <sup>(3)</sup> | 100 ml Kit<br>500 ml Kit | P04-7751K<br>P04-77510K  |
| PowerStem ESPro2 with LIF <sup>(3)</sup>    | 100 ml Kit<br>500 ml Kit | P04-7702K<br>P04-77020K  |
| PowerStem ESPro2 without LIF <sup>(3)</sup> | 100 ml Kit<br>500 ml Kit | P04-7762K<br>P04-77620K  |
| PowerStem EST <sup>(3)</sup>                | 100 ml Kit<br>500 ml Kit | P04-77210K<br>P04-77250K |
| PowerStem HE1 <sup>(3)</sup>                | 100 ml Kit<br>500 ml Kit | P04-7711K<br>P04-77110K  |
| PowerStem HE2 <sup>(3)</sup>                | 100 ml Kit<br>500 ml Kit | P04-7712K<br>P04-77120K  |
| PowerStem iPS1 <sup>(3)</sup>               | 100 ml Kit<br>500 ml Kit | P04-7713K<br>P04-77130K  |
| PowerStem iPS2 <sup>(3)</sup>               | 100 ml Kit<br>500 ml Kit | P04-7714K<br>P04-77140K  |
| PowerStem MSC1 <sup>(3)</sup>               | 100 ml Kit<br>500 ml Kit | P04-77310K<br>P04-77350K |
| PowerStem HPSC <sup>(3)</sup>               | 100 ml Kit<br>500 ml Kit | P04-77410K<br>P04-77450K |
| PowerStem PEC1 ready-to-use <sup>(3)</sup>  | 500 ml                   | P04-777500               |
| PowerStem PEC1 kit <sup>(3)</sup>           | 500 ml Kit               | P04-77750K               |

PowerStem ESPro1

**PowerStem ESPro1** is an easy to use serum-free medium for cultivation of embryonic stem cells of mice (mES cells). These pluripotent cells are derived from blastocysts and they can be established to a permanent cell culture. After injection into blastocysts in chimeras, they can form all tissues, including germ cells. In PowerStem ESPro1, the mES cells largely maintain their undifferentiated state and can be integrated into the germ line.

Composition

PowerStem ESPro1 contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors, hormones and growth factors in an optimized formulation. PowerStem ESPro1 is fully chemically defined and contains no peptones or hydrolysates.

Please note: Supplemented PowerStem ESPro1 contains LIF in a concentration of 10 µg/l. If higher levels of LIF are required for your experimental setting, please add additional LIF to the medium.

Suitability

Serum-free cultivation of embryonic stem cells of mice (mES cells), while maintaining the undifferentiated state. PowerStem ESPro1 is especially designed for the serum-free generation of knockout-mice from genetically modified mES cells. PowerStem ESPro1 has also been proven to support the serum-free cultivation and expansion of tumor progenitor cells.

Please note: For research use only, not for therapeutic or diagnostic use.

Special advantages

PowerStem ESPro1 allows the cultivation and expansion of mouse embryonic stem cells (mES cells) under serum-free conditions. It is fully defined in its composition and thus enables constant and comparable experimental conditions resulting in highly reproducible data. The mES cell culture can be established without the usual feeder layer (primary fibroblasts), cells show a high proliferation rate and largely retain an undifferentiated state. By adding specific differentiation factors, mES cells can differentiate in vitro to the desired cell types (e.g. nerve cells, muscle cells, endothelial cells, etc.). Following injection into blastocysts, they can form all tissues in chimeras. Therefore it is possible to generate animals whose genome has been manipulated previously in a cell culture (e.g. knock-out / knock-in mice).

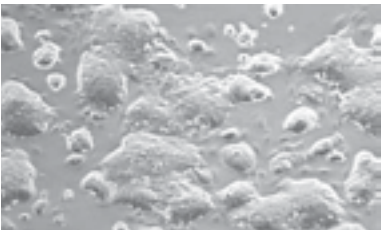
Please note: For differentiation studies LIF supplement must be omitted.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for PowerStem ESPro1. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



mES-cells in PowerStem ESPro1



JM8-cells in PowerStem ESPro1



mES-cells in medium with 10% FBS

|   |                          |                         |
|---|--------------------------|-------------------------|
| PowerStem ESPro1 with LIF <sup>(3)</sup>    | 100 ml Kit<br>500 ml Kit | P04-7701K<br>P04-77010K |
| PowerStem ESPro1 without LIF <sup>(3)</sup> | 100 ml Kit<br>500 ml Kit | P04-7751K<br>P04-77510K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

PowerStem ESPro2

**PowerStem ESPro2** is a serum-free medium for cultivation and expansion of embryonic stem cells of mice (mES cells). PowerStem ESPro2 is especially designed to proliferate and expand mES cells without differentiation. To differentiate the proliferated mES cells into different cell types the relevant protocols and differentiation factors can be used.

Composition

PowerStem ESPro2 contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors, hormones and growth factors in an optimized formulation. PowerStem ESPro2 is fully chemically defined and contains no peptones or hydrolysates.

Please note: Supplemented PowerStem ESPro2 contains LIF in a concentration of 10µg/l. If higher levels of LIF are required, please add additional LIF to the medium.

Suitability

PowerStem ESPro2 is especially designed for the serum-free cultivation of murine embryonic stem cells (mES cells), while maintaining the undifferentiated state. PowerStem ESPro2 is suitable for the serum-free generation of knockout-mice from genetically modified mES cells. PowerStem ESPro2 has also been proven to support the serum-free cultivation and expansion of tumor progenitor cells.

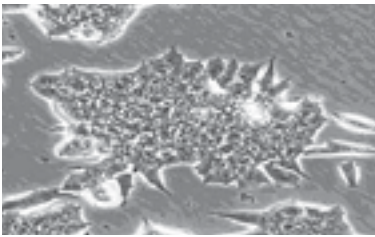
Please note: For research use only, not for therapeutic or diagnostic use.

Special advantages

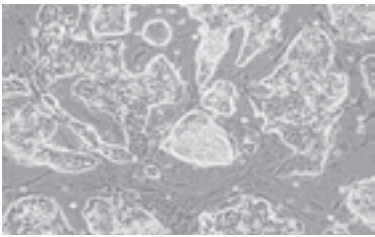
PowerStem ESPro2 allows the cultivation and expansion of mouse embryonic stem cells (mES cells) under serum-free conditions. It is fully defined in its composition and thus enables constant and comparable experimental conditions resulting in highly reproducible data. The mES cell culture can be established without the usual feeder layer (primary fibroblasts), cells show a high proliferation rate and largely retain an undifferentiated state. By adding specific differentiation factors, mES cells can differentiate in vitro to the desired cell types (e.g. nerve cells, muscle cells, endothelial cells, etc.).

Instructions for use

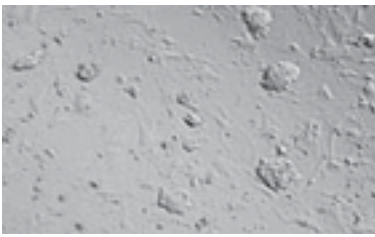
Detailed instructions will be provided with the accompanying datasheet for PowerStem ESPro2. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



mES-cells in PowerStem ESPro2



mES-cells in PowerStem ESPro2



ES-cells in medium with 10% FBS

|   |                          |                         |
|---|--------------------------|-------------------------|
| PowerStem ESPro2 with LIF <sup>(3)</sup>    | 100 ml Kit<br>500 ml Kit | P04-7702K<br>P04-77020K |
| PowerStem ESPro2 without LIF <sup>(3)</sup> | 100 ml Kit<br>500 ml Kit | P04-7762K<br>P04-77620K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

PowerStem EST

**PowerStem EST** is a serum-free system for the cultivation and proliferation of undifferentiated mouse embryonic stem cells (mES cells) and their subsequent differentiation into beating myocardial cells (e.g. for the embryonic stem cell test EST). The EST has been formally validated by the European Centre for Validation of Alternative Methods (ECVAM) as an acceptable in vitro embryotoxicity assay. The in vitro embryonic stem cell test (EST) allows for categorisation of the embryo-toxic potential of chemicals and drug candidates. For the screening process of newly developed chemicals and pharmaceuticals, a prediction model was developed based on the inhibition of differentiation of murine embryonic stem cells into cardiomyocytes.

The application of the EST for chemical testing reduces time, testing costs and the amount of animal experimentation for embryo-toxicity tests.

Composition

PowerStem EST medium kit is composed of a complex basal medium containing salts, amino acids, vitamins, and micronutrients to which a serum-free supplement (PowerStem EST growth supplement) consisting of a mixture of proteins, growth factors and hormones is added immediately prior to use. For sustainment in undifferentiated condition and growth of ES cells, mouse leukemia inhibitory factor (mLIF, 1000 U/ml) is added to the supplemented basal medium (PowerStem EST LIF supplement). For differentiation into beating myocardial cells, a mix of differentiation factors (PowerStem EST differentiation supplement) is added to the supplemented basal medium (without mLIF).

Suitability

Cardiomyocytes differentiated from stem cells can be used for a multitude of purposes:

- Use in basic research for examining early development processes needed for functional cardiogenesis in vitro
- Testing chemicals and pharmaceutical ingredients for mutagenicity, cytotoxicity and embryotoxicity (embryonic stem cell test, EST)
- Screening of anti-angiogenetic substances
- Electrophysiological analyses for investigating cardio-active drugs
- Development of new active ingredients

|                              |                          |                          |
|------------------------------|--------------------------|--------------------------|
| PowerStem EST <sup>(3)</sup> | 100 ml Kit<br>500 ml Kit | P04-77210K<br>P04-77250K |
|------------------------------|--------------------------|--------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

The basal medium is used for both, proliferation and differentiation; defined factors are added according to the objective – sustainment and growth or differentiation of ES cells.

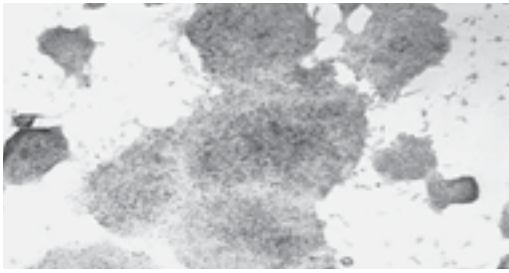
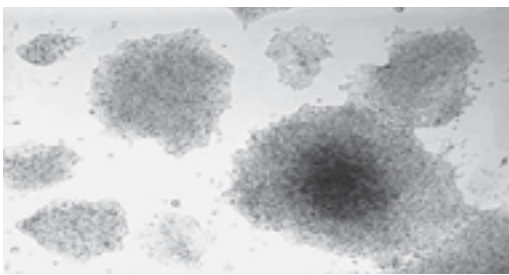
Special advantages

Traditionally, in vitro differentiation of mouse embryonic stem cells takes place using fetal bovine serum (FBS). It has been shown that the use of FBS is a limiting factor for successful differentiation of ES cells into cardiomyocytes. Some batches of FBS result in poor differentiation, while some batches may not allow differentiation at all. The search for suitable FBS batches and the dramatic variability makes the differentiation of ES cells with serum-containing media a time and money consuming exercise.

In contrast, it has been demonstrated that the number of differentiated ES cells is substantially increased under serum-free conditions, and the rate of differentiation is quite stable. The PowerStem EST medium kit successfully stimulates the expansion of undifferentiated ES-cells and promotes their subsequent differentiation into beating myocardial cells under serum-free conditions, resulting in highly comparable findings from standardized experiments.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for PowerStem EST. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



ES cells cultivated in PowerStem EST with LIF (staining: alkaline phosphatase)



PowerStem HE1

**PowerStem HE1** is a specialized serum-free medium for the cultivation and expansion of human embryonic stem cells (hES cells). Pluripotent human embryonic stem cells have the capacity to differentiate into all of the somatic cell types and therefore hold great promise for regenerative medicine. Even after long-term culture, cells maintained on Matrigel or Laminin retain a normal karyotype and a stable proliferating rate.

PowerStem HE1 basal medium and PowerStem HE1 growth supplement are guaranteed stable for 12 months when properly stored. PowerStem HE1 complete medium (basal + supplement) is stable for 1 month when stored in the dark at 2-8° C. We do not recommend using the complete medium beyond 1 month.

**Composition**  
PowerStem HE1 contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors, hormones and growth factors in an optimized formulation. PowerStem HE1 is fully defined and contains no peptones or hydrolysates.

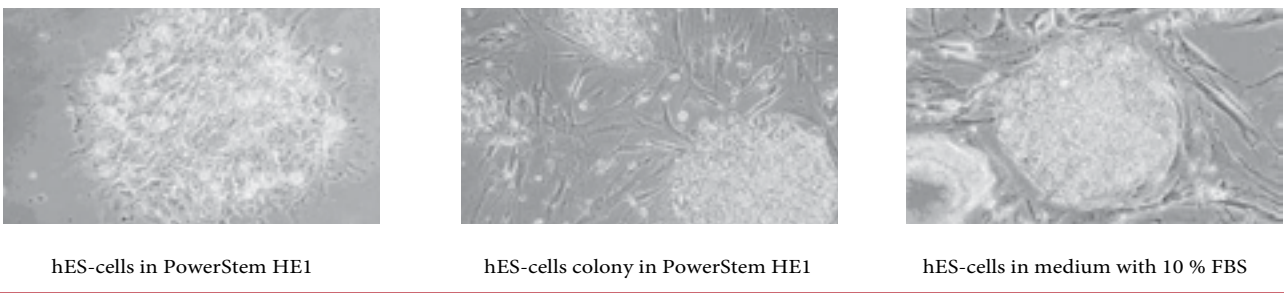
Please note: PowerStem HE1 contains b-FGF in a concentration of 20 µg/l. If higher b-FGF levels are required, please add additional b-FGF to the medium.

**Suitability**  
Serum-free cultivation of human embryonic stem cells (hES cells), while maintaining an undifferentiated state.

Please note: For research use only, not for therapeutic or diagnostic use.

**Special advantages**  
PowerStem HE1 allows the cultivation and expansion of hES cells under serum-free conditions. It is fully defined in its composition and thus enables constant and comparable experimental conditions resulting in highly reproducible data. The hES cells can be cultivated without the usual feeder layers (primary fibroblasts), they show a high proliferation rate and largely retain their undifferentiated state. By adding specific differentiation factors, hES cells can differentiate in vitro to the desired cell types (e.g. nerve cells, muscle cells, endothelial cells, etc.).

**Instructions for use**  
Detailed instructions will be provided with the accompanying datasheet for PowerStem HE1. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



|                              |            |            |
|------------------------------|------------|------------|
| PowerStem HE1 <sup>(3)</sup> | 100 ml Kit | P04-7711K  |
|                              | 500 ml Kit | P04-77110K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

PowerStem HE2

**PowerStem HE2** is a specialized serum-free medium for cultivation and expansion of human embryonic stem cells (hES cells). Pluripotent human embryonic stem cells have the capacity to differentiate into all of the somatic cell types and therefore hold great promise for regenerative medicine. Even after long-term culture, cells maintained on Matrigel or Laminin retain a normal karyotype and a stable proliferating rate.

PowerStem HE2 basal medium and PowerStem HE2 growth supplement are guaranteed stable for 12 months when properly stored. PowerStem HE2 complete medium (basal + supplement) is stable for 1 month when stored in the dark at 2-8° C. We do not recommend using the complete medium beyond 1 month.

**Composition**  
PowerStem HE2 contains purified and recombinant proteins, lipids, salts, amino acids, trace elements, attachment factors, hormones and growth factors in an optimized fomulation. PowerStem HE2 is chemically defined and contains no animal-derived components.

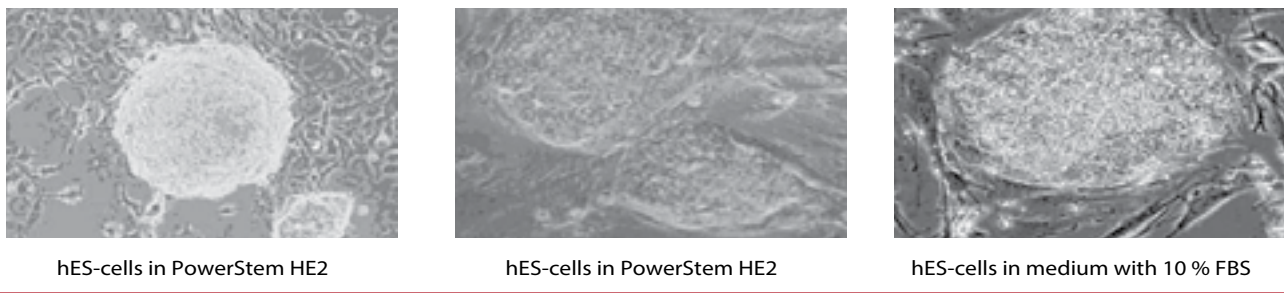
Please note: PowerStem HE2 contains b-FGF in a concentration of 2 µg/l. If higher b-FGF levels are required, please add additional b-FGF to the medium.

**Suitability**  
Serum-free cultivation of human embryonic stem cells (hES cells), while maintaining an undifferentiated state.

Please note: For research use only, not for therapeutic or diagnostic use.

**Special advantages**  
PowerStem HE2 allows the cultivation and expansion of hES cells under serum-free conditions. It is fully defined in its composition thus enabling constant and comparable experimental conditions resulting in highly reproducible data. The hES cells can be cultivated without the usual feeder layers (primary fibroblasts), they show a high proliferation rate and largely retain their undifferentiated state. By adding specific differentiation factors, hES cells can differentiate in vitro to the desired cell types (e.g. nerve cells, muscle cells, endothelial cells, etc.).

**Instructions for use**  
Detailed instructions will be provided with the accompanying datasheet for PowerStem HE2. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).



|                              |            |            |
|------------------------------|------------|------------|
| PowerStem HE2 <sup>(3)</sup> | 100 ml Kit | P04-7712K  |
|                              | 500 ml Kit | P04-77120K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



PowerStem iPS1

**PowerStem iPS1** is a specialized serum-free medium for the cultivation and expansion of human induced pluripotent stem cells (iPS cells). Induced pluripotent stem cells behave similar to human embryonic stem cells and have the capacity to differentiate into all of the somatic cell types and therefore hold great promise for regenerative medicine. Even after long-term culture (> 50 passages) iPS cells retain a normal karyotype and a stable proliferating rate.

PowerStem iPS1 basal medium and PowerStem iPS1 growth supplement are guaranteed stable for 12 months when properly stored. PowerStem iPS1 complete medium (basal + supplement) is stable for 2 weeks when stored in the dark at 2-8° C. We do not recommend using the complete supplemented medium beyond 2 weeks.

**Composition**  
PowerStem iPS1 contains purified and recombinant proteins, lipids, salts, amino acids, trace elements, hormones and growth factors in an optimized formulation. PowerStem iPS1 is a defined medium and contains no animal- or human-derived substances (except human serum albumin (100 µg/ml) as a stabilizing agent).

Please note: PowerStem iPS1 contains FGF-2 in a high concentration; it is not recommended to add additional FGF-2.

**Suitability**  
Serum-free cultivation of human induced pluripotent stem cells (iPS cells) under defined conditions, while maintaining an undifferentiated state.

Please note: For research use only, not for therapeutic or diagnostic use.

**Special advantages**  
PowerStem iPS1 allows the cultivation and expansion of iPS cells under serum-free conditions. It is fully defined in its composition and thus enables constant and comparable experimental conditions resulting in highly reproducible data. The iPS cells can be cultivated without the usual feeder layer of primary fibroblasts, they show a high proliferation rate and largely retain their undifferentiated state. By adding specific differentiation factors, iPS cells can be differentiated in vitro to the desired cell types (e.g. nerve cells, muscle cells, endothelial cells, etc.).

**Instructions for use**  
Detailed instructions will be provided with the accompanying datasheet for PowerStem iPS1. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com)

|                               |            |            |
|-------------------------------|------------|------------|
| PowerStem iPS1 <sup>(3)</sup> | 100 ml Kit | P04-7713K  |
|                               | 500 ml Kit | P04-77130K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



PowerStem iPS2

**PowerStem iPS2** is a chemically defined serum-free medium for cultivation and expansion of human induced pluripotent stem cells (iPS cells). Induced pluripotent stem cells behave similar to human embryonic stem cells and have the capacity to differentiate into all of the somatic cell types and therefore hold great promise for regenerative medicine. Even after long-term culture (> 50 passages) iPS cells retain a normal karyotype and a stable proliferating rate.

PowerStem iPS2 basal medium and PowerStem iPS2 growth supplement are guaranteed stable for 12 months when properly stored. PowerStem iPS2 complete medium (basal + supplement) is stable for 1 week when stored in the dark at 2-8° C. We do not recommend using the complete supplemented medium beyond 1 week.

**Composition**  
PowerStem iPS2 contains lipids, salts, amino acids, trace elements, hormones and recombinant growth factors in an optimized formulation. PowerStem iPS2 is chemically defined and contains no animal- or human-derived substances.

Please note: PowerStem iPS2 contains a high concentration FGF-2; it is not recommended to supplement with additional FGF-2.

|                               |            |            |
|-------------------------------|------------|------------|
| PowerStem iPS2 <sup>(3)</sup> | 100 ml Kit | P04-7714K  |
|                               | 500 ml Kit | P04-77140K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



## PowerStem MSC1

**PowerStem MSC1** is an easy to use xeno-free medium without animal derived components (ADCF) for cultivation and proliferation of human mesenchymal stem cells (hMSC). PowerStem MSC1 is especially designed for the proliferation of human mesenchymal stem cells without differentiation. PowerStem MSC1 supports long-term growth of MSC and preserves their multi-lineage potential. In addition, MSC cultured in PowerStem MSC1 expands faster and shows a significant reduction in hematopoietic cell contamination at early passages compared to serum-based media. To differentiate the proliferated MSC into different cells types the relevant protocols and differentiation factors should be used.

Both the PowerStem MSC1 basal medium and PowerStem MSC1 growth supplement are guaranteed stable for 6 months when properly stored. PowerStem MSC1 complete medium (basal + supplement) is stable for 1 month when stored in the dark at 2-8° C. We do not recommend using the complete medium beyond one month. Do not freeze complete PowerStem MSC1 medium.

### Composition

PowerStem MSC1 contains salts, amino acids, trace elements, hormones, growth factors, and enriched human proteins and lipids in an optimized formulation. PowerStem MSC1 is free of animal derived components (ADCF, xenofree) and contains no undefined peptones or hydrolysates.

### Suitability

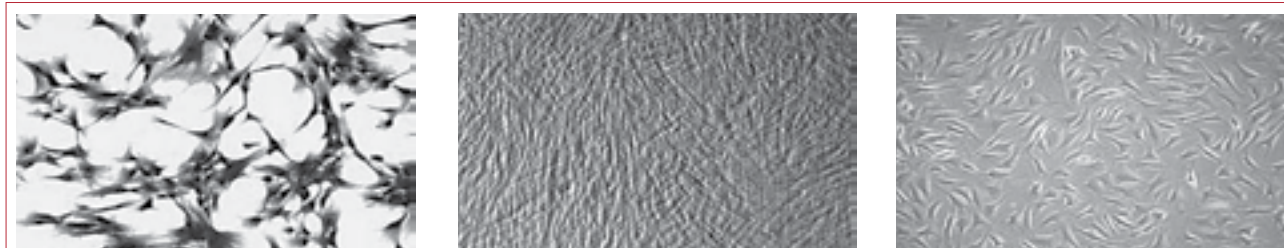
Serum-free cultivation of human mesenchymal stem cells (hMSC) while maintaining the undifferentiated state and multi-lineage potential. Please note: For research use only, not for therapeutic or diagnostic use.

### Special advantages

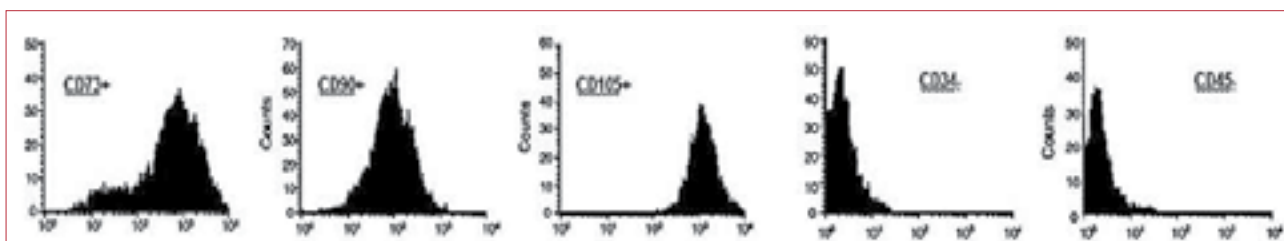
PowerStem MSC1 allows the cultivation of human mesenchymal stem cells under xeno-free conditions. It is free of animal or human serum and thus enables constant and comparable experimental conditions resulting in highly reproducible data. PowerStem MSC1 is completely free of animal components (ADCF, xeno-free) and thus suitable for a research approach in regenerative medicine and tissue engineering. By adding specific differentiation factors, MSC can differentiate in vitro to the desired cell types (bone, cartilage, adipose tissue etc.).

### Instructions for use

Detailed instructions will be provided with the accompanying datasheet for PowerStem MSC1. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com). For more instructions please see instruction manual for isolation and culture of hMSC.



Sub-confluent hMSC in PowerStem MSC1      Confluent hMSC in PowerStem MSC1      hMSC in medium with 10% FBS



The culture-expanded cell population expresses CD90 (Thy-1), CD105 (SH2) and CD73 (SH3/SH4) but lacks expression of CD34 and CD45.

|                               |            |            |
|-------------------------------|------------|------------|
| PowerStem MSC1 <sup>(3)</sup> | 100 ml Kit | P04-77310K |
|                               | 500 ml Kit | P04-77350K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

**PAN**<sup>TM</sup>  
**BIOTECH**

## PowerStem HPSC

**PowerStem HPSC** is a specialized serum-free medium for the cultivation and expansion of human hematopoietic stem cells (HPSC) and cells of myeloid lineage in suspension culture. Hematopoietic stem cells are CD34+, which are the earliest hematopoietic stem cells identifiable in bone marrow, peripheral blood and neonatal cord blood. By adding one or more differentiation factors or changing culturing conditions, HPSC can be induced to differentiate into different types of hematopoietic lineage cells.

PowerStem HPSC basal medium, PowerStem HPSC growth supplement and PowerStem HPSC cytokine supplement are guaranteed stable for 12 months when properly stored. PowerStem HPSC complete medium (basal + supplements) is stable for 3 months when stored in the dark at 2-8° C. We do not recommend using the complete medium beyond 3 months.

### Composition

PowerStem HPSC contains purified proteins, lipids, salts, amino acids, trace elements, attachment factors, hormones and growth factors in an optimized formulation. PowerStem HPSC is fully defined and contains no FBS.

### Suitability

Serum-free cultivation and expansion of human hematopoietic CD34+ stem cells from bone marrow, peripheral blood and neonatal cord blood.

Please note: For research use only, not for therapeutic or diagnostic use.

### Special advantages

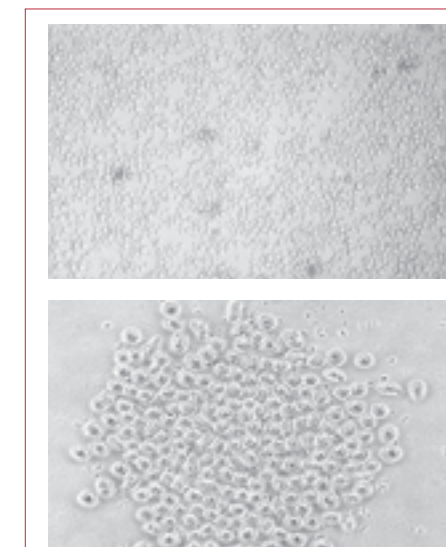
PowerStem HPSC allows the cultivation and expansion of human hematopoietic CD34+ stem cells and cells of myeloid lineage under serum-free conditions. It is fully defined in its composition and thus enables constant and comparable experimental conditions with easily reproducible results. The hematopoietic stem cells can be cultivated without stromal cells, they show a high proliferation rate and largely retain their undifferentiated state. By adding specific differentiation factors, hematopoietic cells can be differentiated in vitro to different types of hematopoietic lineage cells.

### Instructions for use

Detailed instructions will be provided with the accompanying datasheet for PowerStem HPSC. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

### References

Horschitz S et al. (2010) Generation of neuronal cells from human peripheral blood mononuclear cells. Neuro Report 21:185.



Hematopoietic stem cells from neonatal cord blood in PowerStem HPSC

|                               |            |            |
|-------------------------------|------------|------------|
| PowerStem HPSC <sup>(3)</sup> | 100 ml Kit | P04-77410K |
|                               | 500 ml Kit | P04-77450K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

**PAN**<sup>TM</sup>  
**BIOTECH**

PowerStem PEC1

Endothelial cells line blood vessels and the internal cavities of the heart. They display a flattened, polygonal form and adhere to each other by desmosomes and tight-junctions. With a total number of about 10<sup>12</sup> cells, the endothelium is one of the biggest organs of the body and plays a key role in many physiological and pathophysiological processes. A number of factors control proliferation and apoptosis of endothelial cells, thereby regulating maintenance, degeneration, or regeneration of blood vessels.

New blood vessel formation occurs via angiogenesis or vasculogenesis, a process restricted to embryonic development. In 1997, postnatal vasculogenesis has been proposed as an important mechanism for angiogenesis via blood or bone marrow derived circulating progenitor endothelial cells (PEC) (Asahara et al. Science 1997). PEC have been extensively studied as potential cell therapy for the repair of damaged blood vessels. Animal studies clearly demonstrated that administration of PEC partially rescued cardiovascular dysfunction or myocardial injury with evidence for PEC contribution to new vessel growth.

While controversy exists as to the identity of endothelial cell progenitors, recently a PEC population has been identified which shows expression of typical endothelial as well as progenitor markers (Ingram et al. Blood. 2004;104:2752-2760). Importantly, these cells have been tested for a high proliferative potential in clonogenic assays and characterized by formation of functional blood vessels in vivo (Yoder et al. Blood. 2007;109:1801-1809).

With endothelial cell progenitors rapidly moving into the field of interest for vascular tissue engineering with potential therapeutic application, the presence of whole animal serum or animal-derived components in culture media is undesirable for a cell therapeutic approach.

Description

**PowerStem PEC1 ready-to-use** (P04-777500) is a specially developed medium for a serum- and xeno-free in vitro culture of human progenitor endothelial cells (hPEC) containing all components necessary for optimal colony formation, clonogenic growth, and rapid proliferation. It is designed for use in an incubator at 37° C with a 5% CO<sub>2</sub> atmosphere.

**PowerStem PEC1 kit** (P04-77750K) is provided with supplements (pre-screened and tested for progenitor cells) in separate sterile packing. This will enable the user to prepare a medium for special application. For example, VEGF, FGF-2, or other components may be omitted from the complete medium for specific experimental settings. Please note that such a formulation will not promote optimal cell growth. Therefore, this composition can not be used for routine long-term culture of PEC. Please make sure that sterility is not compromised when adding individual components to prepare complete medium. The medium should be carefully but thoroughly mixed after addition of all components to assure a homogeneous solution. Store basal or complete medium at 2 – 8° C and store supplements at -20° C. Expiry: 6 months.

**Basal medium (w/o supplements) or complete/ready-to-use medium should not be frozen!**

Please note: For research use only, not for therapeutic or diagnostic use.

Instructions for use

Detailed instructions will be provided with the accompanying datasheet for PowerStem PEC1. In addition, instructions for use can also be found at [www.pan-biotech.com](http://www.pan-biotech.com).

References

a) Asahara T et al. (1997) Isolation of putative progenitor endothelial cells for angiogenesis. Science 275:964

b) Ingram DA et al. (2004) Identification of a novel hierarchy of endothelial progenitor cells using human peripheral and umbilical cord blood. Blood 104:2752

c) Yoder MC et al. (2007) Redefining endothelial progenitor cells via clonal analysis and hematopoietic stem/progenitor cell principals. Blood 109:1801

|  |            |            |
|--|------------|------------|
| PowerStem PEC1 ready-to-use <sup>(3)</sup> | 500 ml     | P04-777500 |
| PowerStem PEC1 kit                         | 500 ml Kit | P04-77750K |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



# Reagents

|                                  |         |
|----------------------------------|---------|
| Media Supplements                | 93      |
| Buffered Salt Solutions          | 94-96   |
| Amino Acids and Vitamins         | 97      |
| Antibiotics and Antifungal Drugs | 98-99   |
| Mycorase                         | 99      |
| Collagenases                     | 100     |
| Accutase                         | 100     |
| Trypsin and others               | 101     |
| Collagen A                       | 102     |
| Collagen R                       | 102     |
| Gelantine Solution               | 102     |
| Laminin Mouse                    | 103     |
| Fibronectin                      | 103     |
| Albumin                          | 104     |
| Pancoll                          | 105     |
| Separating Solutions Pre-Filled  | 106     |
| PAN SL-S Product Line            | 107     |
| Cryo Preservation                | 108     |
| Disinfectants                    | 109-112 |

# Media Supplements

## Description

### Maximum efficiency without loss of quality

PAN-Biotech reagents are tested according to the highest possible quality standards. All liquid reagents are dissolved according to in-house specifications, sterilized

and filtered at 0.2 µm. Before final release, the reagents undergo extensive quality tests e. g. sterility, pH value, osmo, endotoxin.

## Different Media Supplements

|  |                         |  |
|--|-------------------------|--|
| HAT supplement (50x) <sup>(1)</sup>  | 100 ml                  | P07-02100                              |
| HT supplement (50x) <sup>(1)</sup>   | 100 ml                  | P07-01100                              |
| Hepes buffer 1M <sup>(1)</sup>   | 100 ml<br>500 ml        | P05-01100<br>P05-01500                 |
| Hepes - Sodium salt <sup>(1)</sup>   | 100 g<br>500 g          | P05-01100P<br>P05-01500P               |
| Sodium bicarbonate 7.5 % <sup>(1)</sup>  | 100 ml                  | P04-44100                              |
| Sodium pyruvate 100 mM <sup>(1)</sup>  | 100 ml                  | P04-43100                              |
| ITS solution I (100x) <sup>(1)</sup>   | 5 ml<br>10 ml           | P07-03100<br>P07-03110                 |
| ITS solution II (100x) <sup>(1)</sup>  | 5 ml<br>10 ml           | P07-03200<br>P07-03210                 |
| ITS solution IV (100x) <sup>(3)</sup><br>(w: Linoleic acid, BSA)                         | 5 ml<br>10 ml           | P07-03400<br>P07-03410                 |
| Insulin human rec. 10 mg/ml solution <sup>(1)</sup>                                      | 10 ml                   | P07-04300                              |
| Insulin human recombinant <sup>(1)</sup>   | 100 mg                  | P07-04200                              |
| Sterile Water<br>for cell culture <sup>(1)</sup>   | 500 ml<br>1 L<br>20 L   | P04-991500<br>P04-991000<br>P04-992000 |
| β-Mercapthoethanol 50 mM in PBS <sup>(1)</sup>   | 20 ml<br>100 ml         | P07-05020<br>P07-05100                 |
| Tryptose phosphate (50x) <sup>(3)</sup><br>130 g/l Tryptose phosphate in distilled water | 100 ml                  | P10-031100                             |
| Pluronic F-68 10 % <sup>(1)</sup>  | 100 ml                  | P08-02100                              |
| Human Transferrin apo <sup>(1)</sup>   | 100 mg<br>500 mg<br>1 g | P06-21100<br>P06-21500<br>P06-21000    |
| Demecolcin solution 10 µg/ml <sup>(1)</sup>  | 10 ml                   | P07-91010                              |
| Sodium chloride solution 0.9 % <sup>(1)</sup>  | 500 ml                  | P05-39500                              |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Buffered Salt Solutions

Dulbecco’s Phosphate Buffered Salt Solution

| Composition          |  |         |
|----------------------|--|---------|
|                      | Components                             | mg/L    |
| Inorga-<br>nic Salts | Potassium chloride                     | 200.00  |
|                      | Potassium dihydrogen phosphate         | 200.00  |
|                      | Sodium chloride                        | 8000.00 |
|                      | di-Sodium hydrogen phosphate anhydrous | 1150.00 |
|                      | Calcium chloride x 2H <sub>2</sub> O   | 133.00  |
|                      | Magnesium chloride x 6H <sub>2</sub> O | 100.00  |
|                      |  |         |

Liquid Salt Solution

|  |        |             |
|--|--------|-------------|
| DPBS <sup>(1)</sup><br>without Ca and Mg | 500 ml | P04-36500   |
|  | 1 L    | P04-361000  |
|  | 2,5 L  | P04-3625C   |
|  | 5 L    | P04-3650C   |
|  | 10 L   | P04-360010B |

|  |        |           |
|--|--------|-----------|
| DPBS (10x) <sup>(1)</sup><br>without Ca and Mg | 500 ml | P04-53500 |
|--|--------|-----------|

|  |       |            |
|--|-------|------------|
| DPBS non-sterile <sup>(1)</sup><br>without Ca and Mg | 2,5 L | P04-362500 |
|--|-------|------------|

|                                       |        |           |
|---------------------------------------|--------|-----------|
| DPBS <sup>(1)</sup><br>with Ca and Mg | 500 ml | P04-35500 |
|---------------------------------------|--------|-----------|

|   |        |           |
|---|--------|-----------|
| DPBS (10x) <sup>(2)</sup><br>with Ca and Mg | 500 ml | P04-37500 |
|---|--------|-----------|

Powder

|  |      |            |
|--|------|------------|
| DPBS <sup>(1)</sup><br>without Ca and Mg | 50 L | P04-36050P |
|--|------|------------|

Earl’s Buffered Salt Solution

| Composition              |  |         |
|--------------------------|--|---------|
|                          | Components                                     | mg/L    |
| Inorga-<br>nic Salts     | Potassium chloride                             | 400.00  |
|                          | Sodium chloride                                | 680.00  |
|                          | Sodium dihydrogen phosphate x H <sub>2</sub> O | 140.00  |
|                          | Calcium chloride x 2H <sub>2</sub> O           | 264.92  |
|                          | Magnesium chloride x 6H <sub>2</sub> O         | 139.57  |
| Other<br>Compo-<br>nents | D(+)-Glucose anhydrous                         | 1000.00 |
|                          | Phenol red                                     | 10.00   |

Liquid Salt Solution

|                     |        |           |
|---------------------|--------|-----------|
| EBSS <sup>(2)</sup> | 500 ml | P04-30500 |
|---------------------|--------|-----------|

|   |        |           |
|---|--------|-----------|
| EBSS <sup>(2)</sup><br>without Phenol red | 500 ml | P04-39500 |
|---|--------|-----------|

|   |        |           |
|---|--------|-----------|
| EBSS <sup>(2)</sup><br>without Ca and Mg<br>with 2.2 g/l NaHCO <sub>3</sub> | 500 ml | P04-31500 |
|---|--------|-----------|

|                           |        |           |
|---------------------------|--------|-----------|
| EBSS (10x) <sup>(3)</sup> | 500 ml | P04-38500 |
|---------------------------|--------|-----------|

|  |        |           |
|--|--------|-----------|
| EBSS (10x) <sup>(3)</sup><br>without Ca and Mg<br>without Phenol red | 500 ml | P04-47500 |
|--|--------|-----------|

Powder

|                     |      |            |
|---------------------|------|------------|
| EBSS <sup>(1)</sup> | 10 L | P04-30010P |
|                     | 50 L | P04-30050P |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Buffered Salt Solutions

Hank’s Balanced Salt Solution

| Composition              |  |         |
|--------------------------|--|---------|
|                          | Components                             | mg/L    |
| Inorga-<br>nic<br>Salts  | Potassium chloride                     | 400.00  |
|                          | Sodium chloride                        | 8000.00 |
|                          | di-Sodium hydrogen phosphate anhydrous | 47.88   |
|                          | Calcium chloride x 2H <sub>2</sub> O   | 185.44  |
|                          | Magnesium sulphate dried               | 139.52  |
|                          | Potassium dihydrogen phosphate         | 60.00   |
| Other<br>Compo-<br>nents | D(+)-Glucose anhydrous                 | 1000.00 |
|                          | Phenol red                             | 10.00   |

Hank’s Balanced Salt Solution

Liquid Salt Solution

|   |        |           |
|---|--------|-----------|
| HBSS <sup>(2)</sup><br>with 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-32100 |
|   | 500 ml | P04-32500 |

|   |        |           |
|---|--------|-----------|
| HBSS (10x) <sup>(2)</sup><br>without NaHCO <sub>3</sub> | 100 ml | P04-49100 |
|   | 500 ml | P04-49500 |

|  |        |           |
|--|--------|-----------|
| HBSS <sup>(1)</sup><br>without Ca and Mg<br>with 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-33100 |
|  | 500 ml | P04-33500 |

|   |        |           |
|---|--------|-----------|
| HBSS (10x) <sup>(1)</sup><br>without Ca and Mg<br>without 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-50100 |
|   | 500 ml | P04-50500 |

|   |        |           |
|---|--------|-----------|
| HBSS <sup>(1)</sup><br>without Phenol red<br>with 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-32105 |
|   | 500 ml | P04-32505 |

|   |        |           |
|---|--------|-----------|
| HBSS (10x) <sup>(2)</sup><br>without Phenol red<br>without NaHCO <sub>3</sub> | 100 ml | P04-49105 |
|   | 500 ml | P04-49505 |

|  |        |            |
|--|--------|------------|
| HBSS <sup>(1)</sup><br>without Ca and Mg<br>without Phenol red<br>with 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-34100  |
|  | 500 ml | P04-34500  |
|  | 1 L    | P04-341000 |

|   |        |           |
|---|--------|-----------|
| HBSS (10x) <sup>(2)</sup><br>without Ca and Mg<br>without Phenol red<br>without 0.35 g/l NaHCO <sub>3</sub> | 100 ml | P04-50105 |
|   | 500 ml | P04-50505 |
|   |        |           |

Powder

|   |      |            |
|---|------|------------|
| HBSS <sup>(1)</sup><br>without NaHCO <sub>3</sub> | 10 L | P04-32010P |
|   | 50 L | P04-32050P |

|  |      |            |
|--|------|------------|
| HBSS <sup>(1)</sup><br>without Ca and Mg<br>without NaHCO <sub>3</sub> | 10 L | P04-33010P |
|  | 50 L | P04-33050P |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Buffered Salt Solutions

Puck’s Salt Solution A

Composition

|                          | Components             | mg/L    |
|--------------------------|------------------------|---------|
| Inorga-<br>nic Salts     | Potassium chloride     | 400.00  |
|                          | Sodium chloride        | 8000.00 |
| Other<br>Compo-<br>nents | D(+)-Glucose anhydrous | 1000.00 |

Liquid Salt Solution

Puck’s Salt Solution A<sup>(2)</sup> 100 ml P04-51100  
500 ml P04-51500

Gey’s Balanced Salt Solution

Composition

|                          | Components                               | mg/L    |
|--------------------------|--|---------|
| Inorga-<br>nic Salts     | Potassium chloride                       | 370.00  |
|                          | Sodium chloride                          | 7000.00 |
|                          | di-Sodium hydrogen phosphate             | 120.00  |
|                          | Calcium chloride x2H <sub>2</sub> O      | 225.10  |
|                          | Magnesium chloride x 6 H <sub>2</sub> O  | 210.00  |
|                          | Magnesium sulphate anhydrous             | 34.20   |
|                          | Potassium dihydrogen phosphate nahydrous | 30.00   |
| Other<br>Compo-<br>nents | D(+)-Glucose anhydrous                   | 1000.00 |

Liquid Salt Solution

GBSS<sup>(1)</sup> 500 ml P04-48500  
with 2.27 g/l NaHCO<sub>3</sub>

Powder

GBSS<sup>(1)</sup> 10 L P04-48010P  
without NaHCO<sub>3</sub> 50 L P04-48050P

Tryode’s Salt Solution

Composition

|                          | Components                   | mg/L    |
|--------------------------|------------------------------|---------|
| Inorga-<br>nic Salts     | Potassium chloride           | 200.00  |
|                          | Sodium chloride              | 8000.00 |
|                          | Magnesium chloride anhydrous | 100.00  |
|                          | Calcium chloride anhydrous   | 200.00  |
|                          | Sodium phosphate monobasic   | 50.00   |
| Other<br>Compo-<br>nents | D(+)-Glucose anhydrous       | 1000.00 |

Liquid Salt Solution

Tryode’s Salt Solution<sup>(2)</sup> 500 ml P04-54500

Powder

Tryode’s Salt Solution<sup>(1)</sup> 10 L P04-54010P  
without NaHCO<sub>3</sub> 50 L P04-54050P

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Amino Acids and Vitamins

Amino Acids

|  |                        |  |
|--|------------------------|--|
| BME solution (50x), without L-Glutamine <sup>(3)</sup>             | 100 ml                 | P08-2000                               |
| L-Glutamine 200 mM <sup>(1)</sup>                                  | 50 ml<br>100 ml        | P04-80050<br>P04-80100                 |
| Stable L-Glutamine 200 mM <sup>(1)</sup><br>(L-Alanyl-L-Glutamine) | 50 ml<br>100 ml        | P04-82050<br>P04-82100                 |
| L-Glutamine <sup>(1)</sup><br>Powder                               | 25 g<br>100 g<br>500 g | P04-80025P<br>P04-80100P<br>P04-80500P |
| Stable Glutamine Powder <sup>(1)</sup><br>(L-Alanyl-L-Glutamine)   | 10 g                   | P04-82010P                             |
| MEM (50x) without L-Glutamine <sup>(1)</sup>                       | 100 ml                 | P08-30100                              |
| MEM (50x) with L-Glutamine <sup>(3)</sup>                          | 100 ml                 | P08-31100                              |
| MEM NEAA (100x) <sup>(1)</sup>                                     | 100 ml                 | P08-32100                              |

Vitamins

|   |        |           |
|---|--------|-----------|
| BME vitamins <sup>(3)</sup>                 | 100 ml | P08-40100 |
| MEM (100x) vitamine solution <sup>(1)</sup> | 100 ml | P08-41100 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Antibiotics and Antifungal Drugs

|   |   |  |
|---|---|--|
| Amphotericin B <sup>(1)</sup><br>250 µg/ml            | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-01001<br>P06-01005<br>P06-01050<br>P06-01100 |
| Amphotericin B <sup>(1)</sup><br>Powder               | 50 mg<br>100 mg                           | P06-01050P<br>P06-01100P                         |
| Amphotericin B water soluble <sup>(1)</sup><br>Powder | 25 mg<br>50 mg                            | P06-01225P<br>P06-01250P                         |
| Bacitracin <sup>(1)</sup><br>Powder                   | 10 g<br>25 g                              | P06-02010P<br>P06-02025P                         |
| Gentamycin sulphate <sup>(1)</sup><br>10 mg/ml        | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-03001<br>P06-03005<br>P06-03050<br>P06-03100 |
| Gentamycin sulphate <sup>(2)</sup><br>50 mg/ml        | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-13001<br>P06-13005<br>P06-13050<br>P06-13100 |
| Gentamycin sulphate <sup>(1)</sup><br>Powder          | 1 g<br>10 g<br>25 g                       | P06-03001P<br>P06-03010P<br>P06-03025P           |
| Hygromycin B (50 mg/ml) <sup>(2)</sup>                | 20 ml<br>100 ml                           | P06-08020<br>P06-08100                           |
| Hygromycin B <sup>(1)</sup><br>Powder                 | 50 mg<br>1 g                              | P06-080050P<br>P06-080100P                       |
| Kanamycin sulphate <sup>(2)</sup><br>5 mg/ml          | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-04001<br>P06-04005<br>P06-04050<br>P06-04100 |
| Kanamycin sulphate <sup>(1)</sup><br>10 mg/ml         | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-14001<br>P06-14005<br>P06-14050<br>P06-14100 |
| Kanamycin sulphate <sup>(2)</sup><br>50 mg/ml         | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-15001<br>P06-15005<br>P06-15050<br>P06-15100 |
| Kanamycin sulphate <sup>(1)</sup><br>Powder           | 10 g<br>50 g                              | P06-04010P<br>P06-04050P                         |
| Minocyclin 0.5 mg/ml <sup>(3)</sup>                   | 50 ml<br>100 ml                           | P06-05050<br>P06-05100                           |
| Mycorase <sup>(1)</sup>                               | 100 ml                                    | P06-02100 <b>NEW</b>                             |
| Neomycin sulphate <sup>(3)</sup><br>10 mg/ml          | 50 ml<br>100 ml                           | P06-06050<br>P06-06100                           |
| Neomycin sulphate <sup>(1)</sup><br>Powder            | 10 g<br>25 g<br>100 g                     | P06-06010P<br>P06-06025P<br>P06-06100P           |
| Nystatin solution <sup>(2)</sup><br>10,000 Units/ml   | 100 ml                                    | P06-07800  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Antibiotics and Antifungal Drugs

|  |   |  |
|--|---|--|
| Paneticin 420 50 mg/ml <sup>(3)</sup>  | 20 ml<br>100 ml                           | P06-16020<br>P06-16100                           |
| Paneticin G418 50 mg/ml <sup>(3)</sup>   | 20 ml                                     | P06-16220  |
| Paneticin 420<br>Powder <sup>(1)</sup>   | 1 g<br>5 g<br>10 g                        | P06-16001P<br>P06-16005P<br>P06-16010P           |
| Penicillin/Streptomycin <sup>(1)</sup><br>10,000 Units Penicillin/ml<br>10 mg Streptomycin/ml  | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-07001<br>P06-07005<br>P06-07050<br>P06-07100 |
| Penicillin/Streptomycin/Amphotericin B Mix <sup>(1)</sup><br>10,000 Units Penicillin/ml<br>10 mg Streptomycin/ml<br>25 µg Amphotericin B/ml in 0.85 % saline | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-07301<br>P06-07305<br>P06-07350<br>P06-07300 |
| Penicillin G potassium salt<br>Powder <sup>(1)</sup>   | 25 g<br>100 g                             | P06-08025P<br>P06-08100P                         |
| Streptomycin sulphate<br>Powder <sup>(1)</sup>   | 25 g<br>50 g<br>100 g                     | P06-11025P<br>P06-11050P<br>P06-11100P           |
| Polymycin B sulphate 10,000 Units/ml <sup>(3)</sup>  | 50 ml                                     | P06-09050  |
| Tiamulin 1 mg/ml <sup>(3)</sup>  | 50 x 1 ml<br>50 x 5 ml<br>50 ml<br>100 ml | P06-12001<br>P06-12005<br>P06-12050<br>P06-12100 |
| Zeocin 100 mg/ml <sup>(3)</sup>  | 10 ml                                     | P06-28010  |

Mycorase

Description

Mycorase has been developed to remove a broad range of different strains of mycoplasma in most cell types. Mycorase is easy to use and does not affect eukaryotic cell proliferation. It is a highly effective antibiotic solution for safe eradication of mycoplasma contamination.

Special advantages

- Ready-to-use solution
- Effective removal of mycoplasma
- No effect on cell proliferation
- Broad range of action
- Permanent cure for most cell types

|                         |        |                      |
|-------------------------|--------|----------------------|
| Mycorase <sup>(1)</sup> | 100 ml | P06-02100 <b>NEW</b> |
|-------------------------|--------|----------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Enzymes for Cell Dissociation

Collagenase type I

Natural balance of enzyme activity. Recommended for cell preparation from epithelial lung tissue, tissue of the urprarenal gland and adipose tissue. Store at 2 – 8° C.

Collagenase type II

With especially high activity of clostripain and trypsin. Recommended for cell preparation from liver tissue, bone tissue, cardiac tissue, thyroid gland tissue and salivary gland tissue. Store at 2 – 8° C.

Collagenase type III

Normal collagenase activity with a minimum of proteolytic activity. Especially recommended for breast tissue. Store at 2 – 8° C.

Collagenase type IV

Selected low tryptic activity at high collagenase activity and normal clostripain level. Recommended for cell preparation from the pancreatic island. Store at 2 – 8° C.

|  |               |                        |
|--|---------------|------------------------|
| Collagenase type I (Worthington - USA orgin)   | 100 mg<br>1 g | LS0004194<br>LS0004196 |
| Collagenase type II (Worthington - USA orgin)  | 100 mg<br>1 g | LS0004174<br>LS0004176 |
| Collagenase type III (Worthington - USA orgin) | 100 mg<br>1 g | LS0004180<br>LS0004182 |
| Collagenase type IV (Worthington - USA orgin)  | 100 mg<br>1 g | LS0004186<br>LS0004188 |

Accutase

Description

Accutase is a ready-to-use cell detachment solution made of collagenolytic and proteolytic enzymes. It is used for routine detachment of adherent cells from tissue culture plates and flasks. A multitude of cell types has been successfully sub-cultured with Accutase, including fibroblasts, endothelial, vascular smooth muscle cells, as well as hepatocytes, embryonal stem cells, and many immortalized cell lines such as adherent CHO and BHK cells, HEK 293, L929, HeLa, 3T3, and others. Accutase is free of mammalian or bacterial products.

Composition

Accutase enzymes (activity > 500 U/ml) in DPBS w/o Ca/ Mg with 0.5 mM EDTA and phenol red.

Suitability

Accutase can be used as a direct replacement of trypsin for cell dissociation.

Special advantages

Neutralizing of the Accutase enzymes is not required for routine cell culture passaging. The product is active at room temperature, no pre-warming required or recommended. Gentle detachment of cells for analysis of cell surface markers, transfection procedures, migration or proliferation assays, flow cytometry, and routine cell passage.

|                         |        |                      |
|-------------------------|--------|----------------------|
| Accutase <sup>(1)</sup> | 100 ml | P10-21100 <b>NEW</b> |
|-------------------------|--------|----------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Enzymes for Cell Dissociation

Trypsin and others

Application

For dissociation of tissue and cell monolayer cultures.

Storage

Solution at -20° C, powder at 2 - 8° C.

Shelf life

Solution 24 months, powder 36 months.  
The shelf life commences with date of production.  
Our trypsin is tested negative for mycoplasma.

Other sizes and custom formulation

Please ask for other sizes or special formulations of trypsin; in most cases we can provide a solution.

|  |                        |   |
|--|------------------------|---|
| Trypsin 0.25 %/EDTA 0.02 % in PBS <sup>(1)</sup> without Ca and Mg with Phenol red | 100 ml<br>500 ml       | P10-019100<br>P10-019500                  |
| Trypsin 0.25 %/EDTA 0.02 % in PBS <sup>(1)</sup> without Ca and Mg                 | 100 ml<br>500 ml       | P10-020100<br>P10-020500                  |
| Trypsin 0.25 % in PBS <sup>(1)</sup> without Ca and Mg                             | 100 ml<br>500 ml       | P10-021100<br>P10-021500                  |
| <b>(10x)</b> Trypsin 2.5 % in PBS <sup>(2)</sup> without Ca and Mg                 | 100 ml<br>500 ml       | P10-022100<br>P10-022500                  |
| Trypsin 0.05 %/EDTA 0.02 % in PBS <sup>(1)</sup> without Ca and Mg                 | 100 ml<br>500 ml       | P10-023100<br>P10-023500                  |
| Trypsin 0.05 %/EDTA 0.02 % in PBS <sup>(1)</sup> without Ca and Mg with Phenol red | 100 ml<br>500 ml       | P10-0231SP<br>P10-0235SP                  |
| <b>(10x)</b> Trypsin 0.5 %/EDTA 0.2 % in PBS <sup>(2)</sup> without Ca and Mg      | 100 ml<br>500 ml       | P10-024100<br>P10-024500                  |
| Trypsin 0.5 %/EDTA 0.01 % in PBS <sup>(2)</sup> without Ca and Mg                  | 100 ml<br>500 ml       | P10-027100<br>P10-027500                  |
| Trypsin 0.25 %/1 mM EDTA 4 Na in PBS <sup>(1)</sup> without Ca and Mg              | 100 ml                 | P10-028100                                |
| Trypsin 0.25 %/1 mM EDTA in HBSS <sup>(1)</sup> without Ca and Mg with Phenol red  | 100 ml<br>500 ml       | P10-029100<br>P10-029500                  |
| Trypsin 0.05 %/EDTA 4 Na 0.02 % in HBSS <sup>(2)</sup> wih Phenol red              | 100 ml<br>500 ml       | P10-040100<br>P10-040500                  |
| Trypsin special solution (for ES-cells) <sup>(1)</sup>                             | 100 ml                 | P10-100100                                |
| Trypsin Inhibitor 1 mg/ml <sup>(1)</sup>   | 100 ml                 | P10-033100                                |
| Trypsin powder (1:250) porcine origin <sup>(1)</sup>                               | 25 g<br>100 g<br>250 g | P10-025025P<br>P10-025100P<br>P10-025500P |
| EDTA 1 % in PBS without Ca and Mg <sup>(2)</sup>                                   | 100 ml<br>500 ml       | P10-026100<br>P10-026500                  |
| Dispase II neutral proteins, grade II <sup>(1)</sup>                               | 100 ml                 | P10-032100                                |
| Dispase purified neutral protease <sup>(3)</sup>                                   | 10 mg                  | LS0002100                                 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request





Attachment Factors

Collagen A

**Application**

For dissociation of tissue and cell monolayer

**Storage**

Solution at -20° C (frozen), powder at 2 – 8° C

**Shelf life**

Solution 24 months, powder 36 months. The shelf life commences with date of production. Our trypsin is tested negative for mycoplasma.

**Acid-soluble collagen from bovine placenta**

- Add an equal volume of sterile PBS to the collagen
- Add 1 ml per 10 cm<sup>2</sup> of culture flask and incubate at 35 - 37° C for 30 min
- Remove solution and wash 1x with PBS; use culture flasks immediately

In monolayer culture, normal human and murine liver cells were successfully grown for a period of up to one week, provided that the culture flasks were coated with collagen. Cell growth rates can often be improved by surface coating with attachment factors such as fibronectin, collagen, gelatine or poly-lysine. With a collagen coating, survival time of e.g. hepatocytes can be extended from one week for up to four weeks.

Storage: 2 – 8° C

|            |                |           |
|------------|----------------|-----------|
| Collagen A | 1 x (6 x 5 ml) | P06-20030 |
|------------|----------------|-----------|

Collagen R (type I)

**0.2 % sterile solution**

Type 1 rat tail collagen; 2 mg/ml in 0.1 % acetic acid. Excellent substrate for the culture of hepatocytes, fibroblasts and epithelial cells.

**0.4 % sterile solution**

Type 1 rat tail collagen; 4 mg/ml in 0.1 % acetic acid. Excellent substrate for the culture of hepatocytes, fibroblasts and epithelial cells.

|                                   |                 |                        |
|-----------------------------------|-----------------|------------------------|
| Collagen R 0.2 % sterile solution | 20 ml<br>100 ml | P06-20166<br>P06-20100 |
| Collagen R 0.4 % sterile solution | 20 ml           | P06-20020              |

Gelatine Solution

**Description**

The gelatine solution is used for coating cell culture dishes. It is applied in adherent cell cultures working with e.g. endothelial cells or ES-cells.

|   |        |           |
|---|--------|-----------|
| Gelatine solution 0.1 % in PBS <sup>(1)</sup> | 500 ml | P06-20410 |
| Gelatine solution 2 % in PBS <sup>(2)</sup>   | 100 ml | P06-25200 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request

Attachment Factors

Laminin Mouse

**Description**

This highly purified preparation of mouse Laminin I increases cell adhesion, migration, growth, and differentiation. It is composed of 111 chains with a total MW of 800 kD and is used for the coating of culture dishes.

**Source:**

Murine Engelbreth-Holm-Swarm (EHS) tumor

**Storage Buffer:**

Dulbecco's Modified Eagle's Medium with 10 µg/ml gentamycin sulfate

**Storage:**

Store at -20° C or at -80° C in a manual defrost freezer

**Purity:**

Purity > 90 % by SDS-PAGE

**Coating procedure**

The recommended working concentration is 0.05 - 10 µg/cm<sup>2</sup> of growth surface (0.05 - 10 µg/ml) depending on cell type.

**a.** Thaw stock solution on ice for several hours. Place plates on ice and pre-chill pipette tips. Distribute the solution to completely cover the bottom of the wells.

**b.** The following table gives suggested volume required per well:

| Plate Type              | Volume Laminin per Well |
|-------------------------|-------------------------|
| 6 wells (or 35 mm dish) | 1 ml                    |
| 24 wells                | 200 µl                  |
| 48 wells                | 50 µl                   |
| 96 wells                | 20 µl                   |

**c.** Incubate the plates at 37° C for 1 hour. In the laminar flow hood, remove excess liquid from the wells of the tissue culture plate.

**Rinse the wells once with tissue culture medium and then add your cells.**

**Specifications**

**Functional assays**

- Supports the formation of neuronal filaments of NG108-15 cells in a neurite outgrowth assay

**Sterility testing**

- No bacterial or fungal growth detected after incubation at 37° C for 14 days following USP XXIV, Chapter 71 sterility testing
- No mycoplasma contamination detected by PCR
- Endotoxin concentrations < 20 EU/ml by LAL assay

|                    |      |           |
|--------------------|------|-----------|
| Laminin from mouse | 1 mg | P06-20501 |
|--------------------|------|-----------|

Fibronectin

**Description**

Fibronectin is a large glycoprotein widely distributed in soluble form in the plasma and body fluids. Many cell types synthesize fibronectin. There is also an insoluble form of fibronectin in tissues. Plasma fibronectin is not identical to cellular fibronectin but equally effective in supporting cell attachment. Fibronectin promotes the attachment and spreading of many adherent cells on plastic, but also mediates binding to other extracellular matrix components such as e.g. collagen.

**Preparation**

Fibronectin is purified from human plasma; donors tested negative for anti-HIV antibodies and HBs antigen.

**Reconstitution**

Dissolve contents in sterile water. Prepare a 1 mg/ml solution by gently warming the vial to 37° C; do not agitate, this may cause precipitation.

**Recommended amount for coating**

For coating of cell culture vessels 1-5 µg/cm<sup>2</sup> is used.

**Storage**

Lyophilisate can be stored at 2-8° C; solution stored at -20° C in aliquots.

|                      |         |          |
|----------------------|---------|----------|
| Fibronectin          | 5 mg    | 2705005  |
| Fibronectin solution | 1 mg/ml | 2705001S |

Attachment Factors

Bovine Serum Albumin

**Description**  
Albumins serve as additive proteins for tissue cultures. They are the main protein component in serum and are added to cell culture media to increase the stability of cell membranes and to bind possibly toxic elements.

**Advantages**

- High purity > 99 %
- Minimal lot to lot variation
- Stringent control of raw materials
- US origin
- Full documentation
- Special products for unique applications

**Storage**  
Powder and preserved solutions at 2 - 8 °C.  
Preservative free solution at -20 °C

|  |                        |   |     |
|--|------------------------|---|-----|
| Bovine Serum Albumin (BSA) Fraction V <sup>(1)</sup>   | 50 g<br>100 g<br>500 g | P06-1391050<br>P06-1391100<br>P06-1391500 |     |
| Bovine Serum Albumin (BSA) Protease free <sup>(1)</sup>  | 100 g<br>500 g         | P06-139210<br>P06-139250                  | NEW |
| Bovine Serum Albumin (BSA) Low Endotoxin <sup>(1)</sup>  | 10 g<br>50 g           | P06-139310<br>P06-139350                  | NEW |
| Bovine Serum Albumin (BSA) Fatty acid free <sup>(1)</sup>  | 10 g<br>50 g           | P06-139410<br>P06-139450                  | NEW |
| Bovine Serum Albumin (BSA) <sup>(1)</sup><br>Microbiological grade                                     | 10 g<br>50 g           | P06-0849010<br>P06-0849050                |     |
| Bovine Serum Albumin (BSA) 30 % Solution, <sup>(1)</sup><br>Low salt                                   | 100 ml<br>500 ml       | P06-138110<br>P06-138150                  | NEW |
| Bovine Serum Albumin (BSA) 30 % Solution, <sup>(1)</sup><br>High salt                                  | 100 ml<br>500 ml       | P06-138210<br>P06-138250                  | NEW |
| Bovine Serum Albumin (BSA) 30 % Solution, <sup>(1)</sup><br>High polymer                               | 100 ml<br>500 ml       | P06-138310<br>P06-138350                  | NEW |
| Bovine Serum Albumin (BSA) 30 % Solution, <sup>(1)</sup><br>Low salt, Preservative free, Protease free | 100 ml<br>500 ml       | P06-138410<br>P06-138450                  | NEW |

Other sizes are available upon request.

Human Serum Albumin

**Description**  
Human Serum Albumin is a high quality product suitable for different applications.

**Storage**  
Human Serum Albumin can be stored at 2 - 8 °C.

|  |              |                        |
|--|--------------|------------------------|
| Human Serum Albumin (HSA) <sup>(3)</sup> | 25 g<br>50 g | P06-26025<br>P06-26050 |
|--|--------------|------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Separating Solutions

Pancoll

**Description**  
In many cases the isolation of cells is the first step for gene expression studies or in diagnostic procedures. Besides biological separation techniques physical separation methods are most commonly used. These methods use physical differences such as size and electrical charge of the particles to be separated. For this purpose so-called separating solutions (= centrifugation media) are used.

**These media have to comply with the following criteria:**

- Form a density gradient over the desired range
- Desired pH value and desired osmolality easily adjustable
- The solutions should not be too viscous at high density
- Do not cause any functional or morphological changes in biological materials
- Do not penetrate biological membranes

Our Pancoll separating solutions contain a polysaccharide with a molecular weight of 400,000 daltons; this hydrophilic polymer allows for production of aqueous solutions for cell separation with a density of up to 1.2 g/ml. PAN-Biotech offers a variety of ready-to-use products with a density of 1.063 g/ml up to 1.091 g/ml for a very wide range of cell separation applications.

**Storage:** 2° C to ambient temperature

When properly stored, separating solutions are stable for at least 36 months. The storage period starts with the manufacturing date.

|  |                  |                        |
|--|------------------|------------------------|
| Pancoll human, density 1.077 g/ml <sup>(1)</sup>     | 100 ml<br>500 ml | P04-60100<br>P04-60500 |
| Pancoll mouse, density 1.086 g/ml <sup>(2)</sup>     | 100 ml<br>500 ml | P04-64100<br>P04-64500 |
| Pancoll rat, density 1.091 g/ml <sup>(2)</sup>       | 100 ml<br>500 ml | P04-65100<br>P04-65500 |
| Pancoll animal, density 1.077 g/ml <sup>(2)</sup>    | 100 ml<br>500 ml | P04-63100<br>P04-63500 |
| Pancoll monocytes, density 1.068 g/ml <sup>(3)</sup> | 100 ml<br>500 ml | P04-68100<br>P04-68500 |
| Pancoll platelets, density 1.063 g/ml <sup>(3)</sup> | 100 ml<br>500 ml | P04-67100<br>P04-67500 |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Separating Solutions Pre-Filled

Description

Pancoll separating solutions from PAN-Biotech are made from a neutral, highly cross-linked, hydrophilic polymer of sucrose with an average molecular weight of 400,000 daltons. Pancoll is suited for separation of lymphocytes and other cell types.

The ready-to-use solutions are available in 500 ml bottles (see page 105) as well as in pre-filled ready-to-use tubes with a separating membrane.

Stability

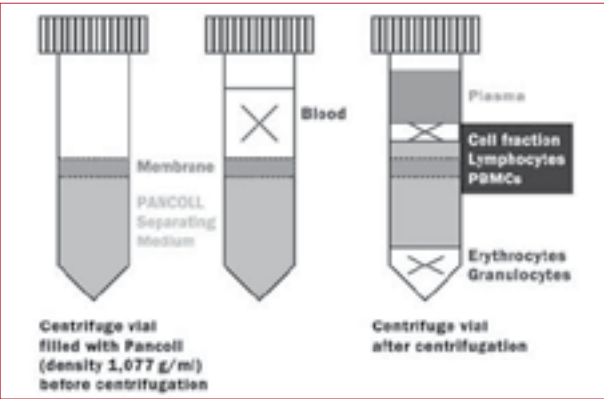
Pancoll is stable for 36 months at 2 °C to 20 °C. Protect from light!

Typical results with Pancoll

|             |                                 |   |
|-------------|---------------------------------|---|
| Lymphocytes | 60 ± 20 %<br>95 ± 5 %<br>> 90 % | yield of lymphocytes from original blood samples of the lymphocyte fraction are mononuclear leukocytes live cells (trypan blue-exclusion) |
| Other cells | 3 ± 2 %<br>5 ± 2 %<br>< 0,5 %   | granulocytes<br>erythrocytes<br>total number of platelets of the original blood sample  |

Method of seperation

For lymphocyte separation blood is used which has been defibrinated or treated with anticoagulants (Heparin, EDTA, Citrate), and which is diluted with the same volume of a physiological saline solution. Then the Pancoll solution is carefully covered with a layer of diluted blood in a centrifuge vial, without mixing the phases. After a short centrifugation step (e.g. 800-1000x g for 20-30 minutes) at room temperature the lymphocytes, together with monocytes and platelets, can be harvested from the white blood cells layer between the plasma sample layer and the Pancoll. The separated cells are then washed twice in physiological saline solution to purify the lymphocytes by removing platelets. During centrifugation the cells of the blood sample migrate to the Pancoll layer where they get into contact with the polysaccharide contained in Pancoll. The red blood cells are aggregated by this substance at room temperature immediately. Aggregation causes an increase of the sedimentation rate of the red blood cells which aggregate together with the granulocytes as a sediment at the bottom of the centrifuge vial. Lymphocytes, monocytes and platelets are not so dense and can not enter and pass through the Pancoll layer. These cells are concentrated as white blood cell layer above the Pancoll layer and therefore can be harvested easily by careful pipetting. In subsequent centrifugation steps the lymphocytes are washed to remove remaining platelets, serum and Pancoll. As a result of this process a highly purified suspension of viable lymphocytes and monocytes (PBMC) is obtained.



|   |                          |                        |
|---|--------------------------|------------------------|
| Pancoll human, density 1.077 g/ml <sup>(1)</sup>  | 25 x 50 ml<br>50 x 10 ml | P04-60125<br>P04-60225 |
| Pancoll animal, density 1.077 g/ml <sup>(3)</sup> | 50 x 10 ml               | P04-63225              |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



PAN SL-S Product Line

Endothelial cell biology has been greatly advanced by studying cultured vascular endothelial cells in vitro. Besides the understanding of many physiologic and pathologic processes, a multitude of basic cell signalling processes has been elucidated by using endothelial cells in culture. Traditionally, complete endothelial growth media contain animal serum. The advance of so-called low-serum media for endothelial cells has improved the quality of experimental data acquired in recent years. However, endothelial cells may synthesize substances which can not be detected due to their low quantity or masking effects from serum. In the past, cellular signalling pathways in endothelial cells have not been decipherable experimentally because even low concentrations of serum present in traditional media induce an undefined and undesired stimulation of cell surface receptors or intracellular signalling which only may become evident under serum-free conditions. As endothelial cells move into the field of interest for vascular tissue engineering with potential therapeutic application, the presence of whole animal serum is undesirable for such applications in the future. All products described below are intended for use in a **serum-free Endothelial Cell Culture System**. Endothelial cells from different sources may be employed. For convenient use in this system, PAN-Biotech offers endothelial cells from human umbilical cord strictly isolated und cultured under animal serum-free conditions. This exclusive cell culture system is optimized for the maintenance and expansion of endothelial cells under serum-free conditions. Information about the composition, suitability, special advantages, and instructions are given for each individual product. For more information on SERUM-FREE Endothelial Cell Culture System from PAN-Biotech, please see accompanying data sheets.

|   |        |            |
|---|--------|------------|
| Panexin SL-S Serum Substitute for HUVEC cultures <sup>(3)</sup> | 25 ml  | P04-90065S |
| SL-S Trypsin/EDTA <sup>(3)</sup>                                | 50 ml  | P10-0231SF |
| SL-S Trypsin-Inhibitor <sup>(3)</sup>                           | 50 ml  | P10-0331SF |
| SL-S Medium (Working Medium) <sup>(3)</sup>                     | 500 ml | P04-300500 |
| SL-S Collagen 0.01 % <sup>(3)</sup>                             | 25 ml  | P06-20650  |
| SL-S Cryopan <sup>(3)</sup>                                     | 25 ml  | P07-94050  |

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Cryo Preservation

DMSO

**Description**  
DMSO (Dimethylsulfoxide) is a colourless organic solvent which enters the cell and distributes inside the cell to prevent the formation of damaging ice crystals during the freezing procedure.

|   |        |              |
|---|--------|--------------|
| Dimethylsulfoxide (DMSO)                  | 100 ml | P60-15840100 |
| Dimethylsulfoxide (DMSO) for cell culture | 100 ml | P60-36720100 |

Freezing Medium

**Description**  
Our freezing medium is recommended for the cryo-conservation of cells. The medium is based on DMEM, supplemented with a mix of fetal bovine serum and DMSO. This composition guarantees a high survival rate and excellent cell growth after thawing.

|                                |       |           |
|--------------------------------|-------|-----------|
| Freezing medium <sup>(1)</sup> | 50 ml | P07-90050 |
|--------------------------------|-------|-----------|

Cryopan

**Description**  
Cryopan I is a serum-free freezing medium for the cryo-conservation of cells in a nitrogen storage tank or an ultra-low temperature freezer (< -150° C). It contains DMSO.

- Freezing procedure**
- Refrigerate freezing medium, culture medium and freezing tubes!
  - Trypsinize cells, transfer the cells into the culture medium and centrifuge. Discard the supernatant and resuspend in culture medium
  - Cell count should be adjusted to 1 - 5 x 10<sup>6</sup>/ml. The cells should be carefully resuspended to avoid clustering
  - Spin down and resuspend the cells in an appropriate volume of cool freezing medium by pipetting only once or twice. Distribute 1 ml cell suspension per freezing tube
  - To achieve a defined freezing rate of about 1° C per minute, manual freezing devices or computer-controlled freezing may be used

**Ideal freezing rate: decrease of 1° C per minute**

|                          |                |                        |
|--------------------------|----------------|------------------------|
| Cryopan I <sup>(3)</sup> | 10 ml<br>50 ml | P07-92010<br>P07-92050 |
|--------------------------|----------------|------------------------|

(1) usually on stock, (2) minimum order 10 l, (3) available upon request



Disinfectants

|   |            |        |
|---|------------|--------|
| Barrycidal 36 spray bottle                | 50 ml      | 360050 |
| Barrycidal 36 dispenser bottle            | 500 ml     | 360400 |
| Barrycidal 36 spray bottle                | 1 l        | 361000 |
| Barrycidal 36 can                         | 5 l        | 365000 |
| Barrycidal 36 can                         | 10 l       | 360000 |
| Barrycidal dispenser box                  | 100 cloths | 360101 |
| Barrydin can                              | 5 l        | 465000 |
| Desipure can                              | 10 l       | 660000 |
| Spray head for 500 ml bottles             |            | 700500 |
| Spray head for 1 l bottles                |            | 701000 |
| Dosage pump for 500 ml bottles            |            | 710500 |
| Wall-mounted dispenser for 500 ml bottles |            |        |
| E24 (short handle)                        |            | 720500 |
| ELS24 (long handle)                       |            | 720501 |
| Dosage pump for cans                      |            | 730010 |
| Tap for cans                              |            | 740010 |





Disinfectants

Barrycidal

**Ready-to-use solution**  
**Barrycidal® 36** is a modern disinfectant which fulfills the newest technical standards. It has a broad spectrum of efficacy and can be used in many aspects of daily life. With the new composition all areas of disinfection and hygiene are covered.

**Characteristics**  
Barrycidal® 36 disinfectant is a ready-to-use solution, suitable for prophylaxis of hospital-acquired infections in all areas of hospitals as well as for disinfection measures in food industry, dairies, soft drink industry, etc. Barrycidal® 36 is composed of a synergistic mixture of selected organic nitrogen compounds. It is effective against the whole spectrum of bacteria, yeasts, fungi, and viruses. Barrycidal® 36 is free of aldehydes, phenolic derivatives, chlorine and peroxides.

- Special advantages of the ready-to-use disinfectant solution Barrycidal:**
- Alcohol-free
  - Non allergenic
  - Poisonous category free
  - Odourless
  - High degree of biological degradability
  - Good compatibility for all materials
  - No irritation of skin or mucous membranes
  - Rapid onset of action with long lasting effect
  - Odour binding
  - Stainless cleaning
  - Large spectrum of efficacy: bacteria, yeast, fungi, viruses (e.g. Hepatitis B, HIV, Rota virus
  - Free of mercury, aldehydes, phenol derivates, chlorine or peroxides

**Indications and area of application**  
Cleaning and disinfection of all kinds of surfaces and objects in one step, especially in areas sensitive for smell, as well as for hand disinfection.

- Medical practice and hospitals
- Public baths
- Fire departements
- Health care
- Asylum
- Cosmetics, Kindergarten
- Laboratory, incubators, centrifuges
- Food industry
- Public facilities
- Podiatry, police
- Ambulance, solarium, sauna, hospital, schools
- Animal shelter
- Veterinarian
- Foot disinfection
- Athlete´s foot prophylaxis
- Shoe disinfection

- Dosage**  
Surface disinfection (Hospitalismus prophylaxis and in general practice, bactericidal, fungicidal):
- undiluted/60 min
  - HBV/HIV: undiluted/30 min
  - Athlete´s foot prophylaxis undiluted/15 min

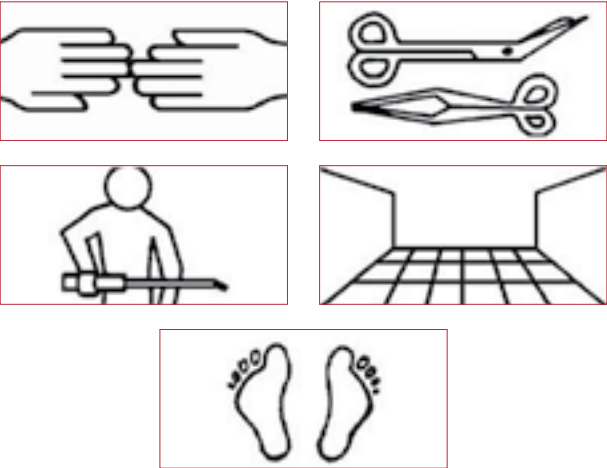
- Application**  
**Surface disinfection**
- Dosage: undiluted/60 min
  - Spray disinfection: The surfaces to be disinfected should be completely wet by spraying. Let dry, no rinsing necessary, unless for surfaces, which come into contact with food

**Composition**  
**100 g contain:**  
0.0975 g n-Octyl-dimethyl-benzylammonium chloride  
0.0300 g Benzethonium chloride  
0.0025 g Methyl-benzethonium chloride  
with some more cleaning and disinfectant substances like propandiol, triethanolamine, etc.

| Physico-chemical Properties |                            |
|-----------------------------|----------------------------|
| Appearance                  | clear, colourless solution |
| pH-Value (20° C)            | 8.0 ± 0.5                  |
| Density (20° C)             | 1.046 ± 0.020              |
| Stability                   | 5 years                    |

**Available sizes**  
50 ml spray bottle  
500 ml round bottle  
1000 ml spray bottle  
5 liter can  
10 liter can

**Classified as non-poisonous and non-toxic solution**  
BAG E1227/T73512 (Swiss)  
DGHM-listed (Germany)  
OEGHMP-listed (Austria)



Disinfectants

Barrydin

**Concentrate for instrument disinfection – free of aldehydes and phenols**

**Characteristics**  
**Barrydin** is a disinfectant based on a synergistic mixture of quaternary ammonium compounds, guanidinium derivatives and alcylpolyamines. It is also free of aldehydes, particulary formaldehyde, phenol derivatives, chlorine, alcohol and similar. It is characterized by a broad spectrum of activity, short contact time, excellent cleaning properties, neutral smell and compatibility of materials. In addition, protein fixation is avoided due to aldehyde-free formulation.

**Range of application**  
Short term disinfection and cleaning in one step. Cleaning and disinfection of all kinds of surgical instruments in all clinical departments and medical practices incl. instruments for micro-invasive surgery (MIS), anesthesia material and flexible and rigid endoscopes.

**Composition**  
100 g Barrydin contain:  
3.75 g Cocos-propylen-diamin guanidine di-acetate  
5.63 g Didecyl-oxyethyl-methyl-ammonium propionate

| Physico-chemical properties      |   |
|----------------------------------|---|
| Appearance:                      | clear, blue-green solution                    |
| pH-Value (20° C):                | concentrate: 9.7<br>2 % aqueous solution 10.4 |
| Conductivity of the concentrate: | 10 mS x cm <sup>-1</sup>                      |
| Density (20° C):                 | 0.995   |

- Microbiology**
- Bactericidal (incl. TbB, mycobacterium terrae) and Fungicidal
  - Virus inactivating (HBV, HIV, Adenovirus, Papovavirus, Poliovirus)
  - Sporocidal (qualitative suspension testing)

- Dosage**  
**Instrument disinfection (incl. M. tuberculosis):**  
1.0 % for 60 min  
2.0 % for 30 min
- Short time disinfection:**  
3% for 15 min
- |                    |                       |
|--------------------|-----------------------|
| HBV/HIV:           | 1% 60 min – 2% 15 min |
| Adeno virus        | 2% 60 min – 4% 30 min |
| Papova virus       | 1% 60 min – 2% 30 min |
| Polio virus 50° C: | 1% 10 min             |

**Application**  
**Prepare a working dilution in the right concentration!**

**Instrument disinfection**  
Immediately after use place open instruments in the working solution. All areas to be cleaned have to be fully submerged in disinfectant solution. Close container if possible. Replace solution for heavy contamination. Wash instruments carefully with running water after appropriate contact time and allow drying. Suitable for cycling techniques and ultrasonic devices.

**Registrations and listings**  
SFOHP = Swiss Federal Office of Health Public Bern E1230/T91445  
Poison-classification: No. 4  
Disinfectant listed by DGHM (Germany certificate)

**Available size**  
5 litre PE-can

- Advantages**
- Cleaning in one step
  - Very economical
  - Short term disinfection
  - Aldehyde and phenol free
  - Extremely low concentration
  - Very broad spectrum of activity
  - Good compatibility for all instruments



Disinfectants

Desipure

Disinfectant cleaning concentrate

**Characteristics**  
**Desipure C-100** is a disinfectant concentrate with intensive cleaning properties for all purposes of surface disinfection and cleaning in all areas of hospitals for hospital-acquired infections as well as for disinfection measures in food industry, kitchen, household and so on. Desipure C-100 contains as active ingredient a surface active organic nitrogen compound. It is effective on the whole spectrum of bacteria, incl. Salmonella, yeasts and fungi.  
Desipure C-100 is free of aldehydes, particularly formaldehyde, phenolic derivatives, chlorine and peroxides.

**Indications**  
Cleaning and disinfection of all kinds of surfaces and objects in one step, particularly in areas sensitive for unpleasant odour.

**Composition**  
**100 g Desipure C-100 contain**

- 9.8 g N,N-Didecyl-N-methyl-poly (oxyethy) ammoniumpropionate
- 12.0 g ethoxylated fatty alcohols glycol derivatives

Physico-chemical properties

|                   |                           |
|-------------------|---------------------------|
| Appearance        | clear, yellowish solution |
| pH-Value (20° C): | 7.0 ± 1.0                 |
| Density (20° C):  | 0.995                     |
| Stability:        | 5 years                   |

**Microbiology**  
Bactericidal  
Fungicidal  
Virus inactivating (HBV, HIV, Rotaviruses)

**Dosage**  
Surface disinfection for hospitalism prophylaxis:  
1.0 % for 1 h  
0.5 % for 4 h

**Application – Surface disinfection**

- Wiping disinfection (two-bucket-method) or similar
- Out of dosage apparatuses
- Cleaning machines
- Spraying with suitable equipment

**Registrations and Listings**  
BAG/SFOHP E1229 / T78288 Poison-classification no.4 Disinfectant listed of DGHM (Germany)

**Available sizes**  
10 litre cans  
Dosage pumps for 10 litre-cans  
Discharge taps for 10 litre cans

**Advantages**

- Neutral odour
- Virus inactivating
- Good biological degradability
- Broad action spectrum
- Highly economical
- Rapid surface disinfection
- Aldehyde and formaldehyde free
- Cleaning in one process step

# Biologicals

|   |         |
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| Human Cytokines and Growth Factors          | 116-118 |
| Others Species Cytokines and Growth Factors | 119     |
| Chemokines                                  | 120     |

# Introduction

## Cytokines, growth factors, and chemokines from PAN-Biotech

Cytokines are becoming increasingly important in cell biology. Sugar-containing proteins have regulating functions for the growth and differentiation of body cells. Many cytokines also play an important role in immunological reactions, and they are then generally referred to as mediators.

Cytokines, which primarily trigger and/or regulate the proliferation and differentiation of target cells, are known as growth factors. These proteins that are transferred as signals from one cell to another, and therefore relay information, play a role mainly in the development of multi-cellular organisms. Growth factors are either secreted i.e. released by the cells into the environment or they are membrane-bound. They function when recognised by a receptor on the surface of the target cell. Only cells that carry the specific receptor for the respective growth factor (= ligand) can respond to the signal.

As soon as the factor binds to its ligand, a change in conformation results in the generation of an intracellular signal. By further signal transfer, this will cause genes to be activated or inactivated.

PAN-Biotech offers a high-quality range of cytokines, growth factors as well as chemokines, chemotactical cytokines ("chemoattractant cytokines"), which can be secreted by many cell types e.g. from phagocytes and dendritic cells but also from tissue cells.

Chemokines can attract and activate leukocytes. They therefore play an important role as mediators in regulating targeted leukocyte migration and the inflammation processes triggered as a result.

Please ask for any chemokine or growth factor which is not listed. We may be able to provide.

Human Cytokines and Growth Factors

| Short Term | Description   | Cat.no.                                | Size                     |
|------------|---|--|--------------------------|
| Acrp30 HEK | Adiponectin Globular rec.                             | CB-2800007<br>CB-2800008               | 2 µg<br>10 µg            |
| Acrp30     | Adiponectin rec.                                      | CB-2800001<br>CB-2800002               | 5 µg<br>25 µg            |
| Acrp30 Tri | Adiponectin Trimeric Form rec.                        | CB-2800010<br>CB-2800011               | 2 µg<br>10 µg            |
| BMP-4      | Bone Morphogenetic protein-4 rec.                     | P-3610002                              | 2 µg                     |
| BMP-6      | Bone Morphogenetic protein-6 rec.                     | CB-1113008                             | 2 µg                     |
| BMP-7      | Bone Morphogenetic protein-7 rec.                     | CB-1113011<br>CB-1113012               | 2 µg<br>10 µg            |
| BDNF       | Brain-Derived Neurotrophic Factor rec.                | CB-1115000<br>CB-1115001<br>CB-1115002 | 2 µg<br>10 µg<br>1 mg    |
| CT-1       | Cardiotrophin-1 rec.                                  | CB-1115006                             | 2 µg                     |
| CNTF       | Ciliary Neurotrophic Factor rec.                      | CB-1515001                             | 20 µg                    |
| EGF        | Epidermal Growth Factor rec.                          | CB-1101001<br>CB-1101002<br>CB-1101003 | 100 µg<br>500 µg<br>1 mg |
| EPO-α      | Erythropoietin-alpha rec.                             | CB-2015001                             | 50 µg                    |
| FGF-1      | Fibroblast Growth Factor-acidic rec.                  | CB-1102010<br>CB-1102011               | 10 µg<br>50 µg           |
| FGF-2      | Fibroblast Growth Factor-basic rec.                   | CB-1102024<br>CB-1102021<br>CB-1102023 | 10 µg<br>50 µg<br>1 mg   |
| Flt3       | Flt3-Ligand rec.                                      | CB-1119000<br>CB-1119001               | 2 µg<br>10 µg            |
| GDNF       | Glial-Drived Neurotrophic Factor rec.                 | CB-1116001                             | 10 µg                    |
| GMCSF/IL3  | gm-csf/IL-3 Fusion Protein (PIXY321) rec.             | CB-2110005                             | 10 µg                    |
| GMCSF      | Granulocyte Macrophage-Colony Stimulating Factor rec. | CB-2110000<br>CB-2110002<br>CB-2110003 | 2 µg<br>10 µg<br>1 mg    |
| GCSF       | Granulocyte-Colony Stimulating Factor rec.            | CB-2110100<br>CB-2110101               | 2 µg<br>10 µg            |
| HGF Sf9    | Hepatocyte Growth Factor Sf9 rec.                     | CB-1108002<br>CB-1108010<br>CB-1108100 | 2 µg<br>10 µg<br>1 mg    |
| HGF CHO    | Hepatocyte Growth Factor, CHO, rec.                   | CB-1108003<br>CB-1108011               | 2 µg<br>10 µg            |
| IGF-1      | Insulin Like Growth Factor-1 rec.                     | CB-1104112<br>CB-1104113               | 20 µg<br>100 µg          |
| IGF-2      | Insulin Like Growth Factor-2 rec.                     | CB-1104201<br>CB-1104202               | 10 µg<br>50 µg           |
| Insulin    | Insulin rec.  | P-2701002<br>P-2701001                 | 25 mg<br>250 mg          |

Human Cytokines and Growth Factors

| Short Term | Description                      | Cat.no.                             | Size                    |
|------------|----------------------------------|-------------------------------------|-------------------------|
| IFN-α 1    | Interferon-alpha 1 rec.          | CB-2120100<br>CB-2120101            | 2 µg<br>10 µg           |
| IFN-α 2a   | Interferon-alpha 2a rec.         | CB-2120110<br>CB-2120112            | 20 µg<br>100 µg         |
| IFN-β 1a   | Interferon-beta 1a rec.          | P-2360011<br>P-2360012<br>P-2360013 | 2 µg<br>10 µg<br>1 mg   |
| IFN-β 1b   | Interferon-beta 1b rec.          | CB-2120121                          | 10 µg                   |
| IFN-γ      | Interferon-gamma rec.            | P-2060020<br>P-2060100<br>P-2061000 | 20 µg<br>100 µg<br>1 mg |
| IL-1β      | Interleukin-1 beta rec.          | CB-2130120<br>CB-2130121            | 2 µg<br>10 µg           |
| IL-1β His  | Interleukin-1 beta, His Tag rec. | CB-2130123                          | 5 µg                    |
| IL-10      | Interleukin-10 rec.              | CB-2131000<br>CB-2131001            | 2 µg<br>10 µg           |
| IL-12      | Interleukin-12 rec.              | CB-2131201                          | 10 µg                   |
| IL-15      | Interleukin-15 rec.              | CB-2131500<br>CB-2131501            | 2 µg<br>10 µg           |
| IL-2       | Interleukin-2 rec.               | CB-2130203<br>CB-2130202            | 10 µg<br>50 µg          |
| IL-3       | Interleukin-3 rec.               | CB-2130300<br>CB-2130301            | 2 µg<br>10 µg           |
| IL-4       | Interleukin-4 rec.               | CB-2130405<br>CB-2130407            | 2 µg<br>10 µg           |
| IL-5       | Interleukin-5 rec.               | CB-2130501                          | 10 µg                   |
| IL-6       | Interleukin-6 rec.               | CB-2130600<br>CB-2130603            | 5 µg<br>20 µg           |
| KGF        | Keratinocyte Growth Factor rec.  | CB-1105001                          | 10 µg                   |
| Leptin     | Leptin rec.                      | CB-1300058                          | 200 µg                  |
| LIF        | Lif rec.                         | CB-1106001                          | 10 µg                   |
| β-NGF      | Nerve Growth Factor beta 2 rec.  | CB-1117001M<br>CB-1117001           | 5 µg<br>20 µg           |
| NRG1       | Neuregulin-1/Heregulin-b2 rec.   | CB-4070010                          | 10 µg                   |
| NT-3       | Neurotrophin-3 rec.              | CB-1125032                          | 10 µg                   |



Human Cytokines and Growth Factors

| Short Term | Description   | Cat.no.                                | Size                   |
|------------|---|--|------------------------|
| PDGF-AA    | Platelet Derived Growth Factor-AA rec.                  | CB-3410010<br>CB-3410011               | 10 µg<br>1 mg          |
| PDGF-AB    | Platelet Derived Growth Factor-AB rec.                  | CB-1109301                             | 10 µg                  |
| PDGF-BB    | Platelet Derived Growth Factor-BB rec.                  | CB-1109200<br>CB-1109201               | 2 µg<br>10 µg          |
| Resistin   | Resistin rec.   | CB-1300118                             | 5 µg                   |
| SCF        | Stem Cell Factor rec.                                   | CB-1110000<br>CB-1110001<br>CB-1110002 | 2 µg<br>10 µg<br>1 mg  |
| TPO        | Thrombopoietin rec.                                     | CB-1127000                             | 2 µg                   |
| TRAIL      | TNF-Related Apoptosis Inducing Ligand/Apo2L rec.        | CB-1127100                             | 10 µg                  |
| TGF-β 1    | Transforming Growth Factor-Beta 1 rec.                  | CB-1111131<br>CB-1111122<br>CB-1111123 | 1 µg<br>5 µg<br>100 µg |
| TGF-β 3    | Transforming Growth Factor-Beta 3 rec.                  | CB-1111151<br>CB-1111153               | 2 µg<br>10 µg          |
| rHuTNFR    | Tumor Necrosis Factor Receptor Fusion Protein rec.      | CB-1111162                             | 1 mg                   |
| TNF-α      | Tumor Necrosis Factor-alpha rec.                        | CB-1112011<br>CB-1112012               | 10 µg<br>50 µg         |
| VEGF (121) | Vascular Endothelial Growth Factor (121) rec.           | CB-1114002                             | 10 µg                  |
| VEGF       | Vascular Endothelial Growth Factor rec.                 | CB-1114100<br>CB-1114102               | 2 µg<br>10 µg          |
| VEGF-C     | Vascular Endothelial Growth Factor Related Protein rec. | CB-1114011                             | 10 µg                  |
| VEGF CHO   | Vascular Endothelial Growth Factor, CHO rec.            | CB-1114013                             | 2 µg                   |

Other Species Cytokines and Growth Factors

| Short Term | Description   | Cat.no.                                | Size                  |
|------------|---|--|-----------------------|
| mβ-NGF     | Murine beta Nerve Growth Factor rec.                          | CB-1117007<br>CB-1117008               | 5 µg<br>20 µg         |
| mEGF       | Murine Epidermal Growth Factor rec.                           | CB-1214120<br>CB-1214121               | 100 µg<br>500 µg      |
| mFGF-2     | Murine Fibroblast Growth Factor-basic rec.                    | P-3860001<br>P-3860002                 | 10 µg<br>50 µg        |
| mFlt3      | Murine Flt3-Ligand rec.                                       | CB-2250001                             | 10 µg                 |
| mGMCSF     | Murine Granulocyte Macrophage-Colony Stimulating Factor rec.  | CB-2210000<br>CB-2210001<br>CB-2210002 | 2 µg<br>10 µg<br>1 mg |
| mGCSF      | Murine Granulocyte-Colony Stimulating Factor rec.             | CB-1200000                             | 2 µg                  |
| mIFN-γ     | Murine Interferon-gamma rec.                                  | CB-2230030<br>CB-2230031               | 20 µg<br>100 µg       |
| mIL-1α     | Murine Interleukin-1 alpha rec.                               | CB-2230111                             | 10 µg                 |
| mIL-1β     | Murine Interleukin-1 beta rec.                                | CB-2230120<br>CB-2230121               | 2 µg<br>10 µg         |
| mIL-12     | Murine Interleukin-12 rec.                                    | CB-2231202                             | 0.1 mg                |
| mIL-2      | Murine Interleukin-2 rec.                                     | CB-2230220<br>CB-2230221               | 5 µg<br>20 µg         |
| mIL-3      | Murine Interleukin3- rec.                                     | CB-2230300<br>CB-2230301<br>CB-2230302 | 2 µg<br>10 µg<br>1 mg |
| mIL-4      | Murine Interleukin-4 rec.                                     | CB-2230403                             | 2 µg                  |
| mIL-6      | Murine Interleukin-6 rec.                                     | CB-2230600<br>CB-2230601<br>CB-2230602 | 2 µg<br>10 µg<br>1 mg |
| mMCSF      | Murine Macrophage Colony Stimulating Factor rec.              | P-4390002<br>P-4390010                 | 2 µg<br>10 µg         |
| mSCF       | Murine Stem Cell Factor rec.                                  | CB-1210000                             | 2 µg                  |
| mTNF-α     | Murine Tumor Necrosis Factor-alpha rec.                       | CB-1212011M<br>CB-1212011              | 5 µg<br>20 µg         |
| mVEGF      | Murine Vascular Endothelial Growth Factor rec.                | CB-1214000<br>CB-1214001               | 2 µg<br>10µg          |
| bECGS      | ECGS (from bovine hypothalamus)                               | CB-11000050                            | 50 mg                 |
| oPrl       | Ovine Prolactin rec.  | CB-2310015<br>CB-2310016               | 10 µg<br>50 µg        |
| pGMCSF     | Procine Granulocyte Macrophage-Colony Stiumlating Factor rec. | CB-2330000                             | 2 µg                  |
| pIL-10     | Porcine Interleukine-10 rec.                                  | CB-2331001                             | 10 µg                 |
| rIFN-γ     | Rat Interferon-gamma rec.                                     | CB-2420031<br>CB-2420032               | 20 µg<br>100 µg       |
| rIL-1α     | Rat Interleukin-1 alpha rec.                                  | CB-2430122                             | 1 mg                  |
| rTNF-α     | Rat Tumor Necrosis Factor-alpha rec.                          | CB-1412011                             | 20 µg                 |

Chemokines

| Short Term   | Description  | Cat.no.                  | Size         |
|--------------|--|--------------------------|--------------|
| I-309        | Human I-309 (CCL1) rec.                                  | CB-1232701               | 10 µg        |
| I-TAC        | Human I-TAC (CXCL11) rec.                                | P-3340002                | 20 µg        |
| Lymphotactin | Human Lymphotactin (XCL1) rec.                           | CB-1122001               | 10 µg        |
| MCP-2        | Human Monocyte Chemotactic Protein-2 (CCL8) rec.         | CB-1407003               | 2 µg         |
| SDF-1α       | Human Stromal Cell-Derived Factor-1 alpha (CXCL12) rec.  | CB-1118005               | 10 µg        |
| mMCP-1       | Murine Monocyte Chemotactic Protein-1 (CCL2) rec.        | CB-2232000<br>CB-2232002 | 2 µg<br>1 mg |
| mSDF-1α      | Murine Stromal Cell-Derived Factor-1 alpha (CXCL12) rec. | CB-1118008               | 10 µg        |

# Molecular Biology

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## Polymerases

### Taq DNA Polymerase

The Taq DNA Polymerase is a thermo-stable DNA polymerase complex exactly following the original procedure for the isolation of DNA polymerases.

#### Storage and dilution buffer

20 mM Tris-HCl (pH 8.0), 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, 50% glycerol, 0.5% Nonidet P40 and 0.5% Tween 20.

#### Unit definition

One unit is defined as the amount of enzyme that incorporates 10 nmoles of dNTP's into acid-insoluble fraction in 30 minutes at 72° C under the standard assay conditions: 25 mM TAPS (tris-(hydroxymethyl)-methyl-amino-propansulfonic acid, sodium salt) pH 9,3 (at 25° C), 50 mM KCl, 2 mM 50 mM MgCl<sub>2</sub>, 1 mM beta-mercaptoethanol, 200 µM each dATP, dGTP, dTTP, 100 µM dCTP (a mix of cold and P32-labelled), 12,5 µg activated salmon sperm DNA, in a final volume of 50 µl.

#### Supplied buffers (alternatively with complete or incomplete buffer)

- 10x PCR buffer with MgCl<sub>2</sub>:  
100 mM Tris-HCl (pH 9.0 at 25° C), 500 mM KCl  
15 mM MgCl<sub>2</sub>, 1.0% Triton X-100
- 10x PCR buffer without MgCl<sub>2</sub>:  
100 mM Tris-HCl (pH 9.0 at 25° C), 500 mM KCl  
1.0% Triton X-100
- Magnesium stock solution:  
25 mM MgCl<sub>2</sub>

#### Stability

The enzyme is stable for more than 12 months if stored at -20° C. The enzyme is also stable for some days at temperatures above 20° C.

#### Associated activities

Endonuclease and exonuclease activities were not detectable after 4 hours incubation of 1 µg native lambda DNA and 0.22 µg of EcoR I-digested lambda DNA at 72° C in the presence of 15 - 20 units of Taq DNA Polymerases.

#### Properties and application

The Taq DNA Polymerase is a thermostable DNA polymerase from *T. aquaticus* of high purity with good fidelity and high processivity.

|  |           |             |
|--|-----------|-------------|
| Taq DNA Polymerase with buffer and MgCl <sub>2</sub>                 | 250 units | MB-30010250 |
| Taq DNA Polymerase with buffer and MgCl <sub>2</sub> with Phenol red | 250 units | MB-30020250 |

Polymerases

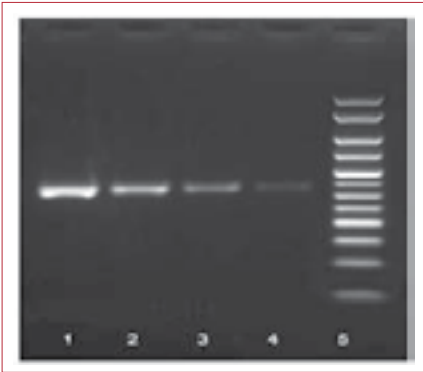
PANScript DNA Polymerase

Features and applications

- Consistent results
- Premium Taq polymerase suited for a wide range of applications
- Processes fragments of up to 5Kb
- Leaves “A” overhang
- Available as ready-to-use 2x reaction mixes (PAN Mix and PAN Mix red)
- Routine PCR applications
- Products suitable for TA cloning

PANScript is widely used by molecular biologists that have come to depend upon the robust performance of this reagent.

PANScript is a highly purified thermostable DNA polymerase offering very high yield over a wide range of PCR templates, and is the ideal choice for most assays. PanScript is a robust preparation and consistently delivers high yields with minimal background. PANScript possesses 5’ to 3’ exonuclease activity and leaves an “A” overhang such that the PCR product is suitable for effective integration into TA cloning vectors. PANScript is supplied with 10x NH<sub>4</sub>-based reaction buffer, which provides optimal conditions for most experiments. Additional MgCl<sub>2</sub> is provided to allow reaction conditions to be adjusted to suit the template. The specificity and performance of PANScript can be further improved with the use of 2x PAN Mate Additive (Cat No. PAN737041), which is designed for GC- or AT-rich DNA, dirty templates or sequences with a high level of secondary structure.



High performance with PANScript  
A175 bp fragment was amplified from pG EM 3z f(+) using PANScript DNA-Polymerase.Lane 1-4: 10-fold serial dilution of template. (starting concentration 25 ng/μl) Lane 5: PANLadder V

|                          |           |            |
|--------------------------|-----------|------------|
| PANScript DNA Polymerase | 500 units | MB-1100500 |
|--------------------------|-----------|------------|

PANScript DNA Polymerase is purified from *Thermus aquaticus*.

PCR Reaction Conditions (for a 50 μl volume)

|   |              |
|---|--------------|
| 10x NH <sub>4</sub> Buffer  | 5 μl         |
| 50 mM MgCl <sub>2</sub> Solution                                      | 1.5 - 4.0 μl |
| 100 mM dNTP Mix (see below)   | 0.5 - 1.0 μl |
| Template and Primers  | as required  |
| PANScript   | 0.5 - 1.0 μl |
| Water (ddH <sub>2</sub> O)  | up to 50 μl  |
| 100 mM dNTP Mix is available as a separate product (Cat No: PAN73028) |              |

Denature: 94 – 96° C  
Elongate: 70 – 72° C (allowing 15 - 30 seconds/Kb)  
This data is intended for use as a guide only; conditions will vary from reaction to reaction and may need optimization.

Reagent specifications

10x NH<sub>4</sub> Reaction Buffer:  
160 mM (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 670mM Tris-HCl (pH 8.8 at 25° C), 0.1% stabilizer

MgCl<sub>2</sub> Stock Solution:  
50 mM MgCl<sub>2</sub> (suggested final concentration 1.5 mM - 4 mM).

Storage buffer

20 mM Tris-HCl, pH 7.5, 100 mM NaCl, 0.1 mM EDTA, 2 mM DTT, 50% Glycerol and stabilizers.

Storage conditions

PANScript can be stored for 12 months at -20° C.

Associated activities

Endonuclease and exonuclease activities were not detectable after 2 and 1 hour incubations, respectively, of 1 μg lambda DNA and 0.22 μg of EcoR I-digested lambda DNA at 72° C in the presence of 15 - 20 units of PANScript DNA polymerase.

Unit definition

One unit is defined as the amount of enzyme that incorporates 10 nmoles of dNTPs into acid-insoluble form in 30 minutes at 72° C.



Polymerases

PANScript red DNA Polymerase

Features and applications

- Easy visual recognition
- Direct loading onto agarose gels
- Same high performance as PANScript DNA Polymerase
- Leaves “A” overhang
- Available as a ready-to-use 2x reaction mix (PAN Mix Red)
- Routine PCR assays
- Products suitable for TA cloning
- High throughput applications

PANScript red DNA Polymerase is a formulation of our regular PANScript DNA Polymerase, which contains a non-toxic and non-hazardous red dye. The red dye provides an easy and quick identification of reactions to which the enzyme has been added, and facilitates the confirmation of complete mixing. When the reaction is complete, a sample of the reaction mix can be loaded directly onto the agarose gel without the need for loading buffer, since the mix is of sufficiently high density to sink to the bottom of the gel. The red dye migrates towards the positive electrode, thereby providing a means to monitor the progress of the electrophoresis.

The presence of the dye has no effect on routine enzymatic manipulations, although rare exceptions may occur. In order to produce a reaction of sufficient density to allow for the direct loading of a sample onto a gel, we recommend using a minimum of 1.5 Units per 50 μl reaction.

The specificity and performance of PANScript red can be further improved with the use of 2x PAN Mate Additive (Cat No. PAN737041), which is designed for GC or AT-rich DNA, dirty templates or sequences with a high level of secondary structure.

|                              |           |            |
|------------------------------|-----------|------------|
| PANScript red DNA Polymerase | 500 units | MB-1100600 |
|------------------------------|-----------|------------|



PANScript DNA Polymerase is purified from *Thermus aquaticus*.

PCR Reaction Conditions (for a 50 μl volume)

|   |              |
|---|--------------|
| 10x NH <sub>4</sub> Buffer  | 5 μl         |
| 50 mM MgCl <sub>2</sub> Solution                                      | 1.5 - 4.0 μl |
| 100 mM dNTP Mix (see below)   | 0.5 - 1.0 μl |
| Template and Primers  | as required  |
| PANScript red   | 1.5 - 2.5 μl |
| Water (ddH <sub>2</sub> O)  | up to 50 μl  |
| 100 mM dNTP Mix is available as a separate product (Cat No: PAN73028) |              |

Denature: 94° – 96° C  
Elongate: 70° – 72° C (allowing 15 - 30 seconds/Kb)  
This data is intended for use as a guide only; conditions will vary from reaction to reaction and may need optimization.

Reagent specifications

10x NH<sub>4</sub> Reaction Buffer: 160 mM (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 670 mM Tris-HCl (pH 8.8 at 25° C), 0.1% stabilizer  
MgCl<sub>2</sub> Stock Solution: 50 mM MgCl<sub>2</sub> (suggested final concentration 1.5 mM - 4 mM).

Storage buffer

20 mM Tris-HCl, pH 7.5, 100 mM NaCl, 0.1 mM EDTA, 2 mM DTT, 50% Glycerol and stabilizers and inert dye. Storage Conditions  
PANScript red can be stored for 12 months at -20° C.

Associated activities

Endonuclease and exonuclease activities were not detectable after 2 and 1 hour incubations, respectively, of 1 μg lambda DNA and 0.22 μg of EcoR I-digested lambda DNA at 72° in the presence of 15 - 20 units of PANScript red DNA polymerase.

Unit definition

One unit is defined as the amount of enzyme that incorporates 10 nmoles of dNTPs into acid-insoluble form in 30 minutes at 72° C.



Polymerases

PAN Hot Start DNA Polymerase

Features and applications

- Outstanding and robust performance
- For PCR assays requiring hot-start
- Excellent yield in quantitative assays
- Convenient set up at room temperature
- Leaves “A” overhang
- Available as ready-to-go versions PAN Hot Mix and PAN Hot Mix red
- Highly suited to real-time assays
- Products suitable for TA cloning

PAN Hot Start is a heat-activated thermostable DNA polymerase isolated from a novel organism. PAN Hot Start provides improved specificity as compared to standard polymerases and can eliminate the presence of non-specifics, such as primer-dimers and mis-primed products. PAN Hot Start is inactive at room temperature and therefore, prior to PCR cycling, requires activation by heat treatment for 10 minutes. Subsequently, the reaction can be handled according to the user’s existing protocols for thermostable DNA polymerases. Specificity and performance of PAN Hot Start can be further improved with the use of 2x PAN Mate Additive, which is designed for GC- or AT-rich DNA, „dirty“ templates or sequences with a high level of secondary structure.

PCR Reaction Conditions (for a 50 µl volume)

10x PAN Hot Start Buffer 5 µl  
50 mM MgCl<sub>2</sub> 1.5 - 4.0 µl  
100 mM dNTP Mix (see below) 0.5 - 1.0 µl  
Template and Primers as required  
PAN Hot Start 0.2 - 1.0 µl  
Water (ddH<sub>2</sub>O) up to 50 µl  
100 mM dNTP Mix is available as a separate product (Cat No: PAN73028)  
Activate: pre-heating step at 95° C for 10 minutes  
Denature: 94° – 96° C  
Extension: 72° C (allowing 15 - 30 seconds/Kb)  
This data is intended for use as a guide only; conditions will vary from reaction to reaction and may need optimization.

Reagent specifications

10x PAN Hot Start Buffer:160mM (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 1M Tris-HCl pH 8.3 and enhancers

Storage Conditions

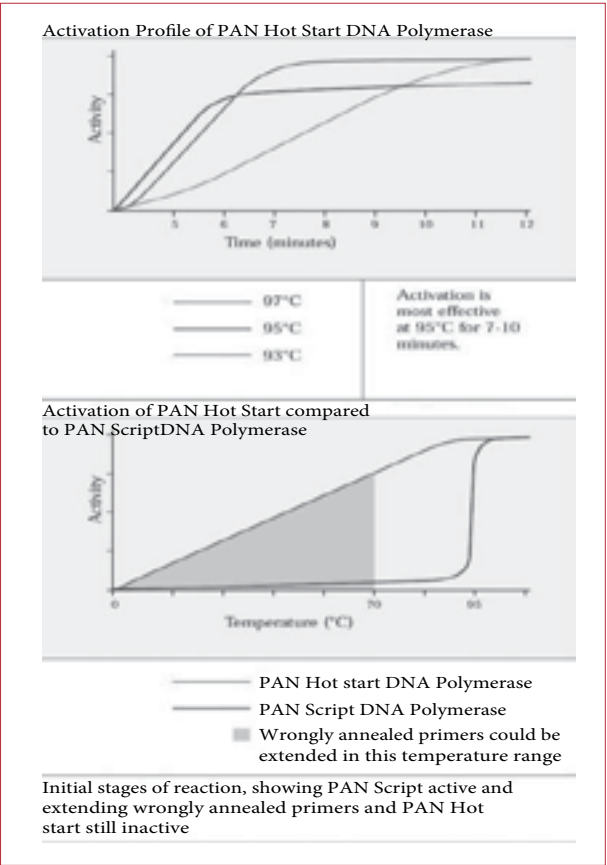
PAN Hot Start DNA Polymerase can be stored for 12 months at -20° C.  
Storage and Dilution Buffer  
20 mM Tris-HCl, pH 7.5, 100 mM NaCl, 0.1mM EDTA, 2 mM DTT, 50% Glycerol, and stabilizers.

Associated activities

Endonuclease and exonuclease activities were not detectable after 4 hours of incubation of 1 µg of pBR322 plasmid DNA and 0.5 µg Hind III-digested lambda phage DNA at 72° C in the presence of 20 u of PAN Hot Start.

Unit definition

One unit is defined as the amount of enzyme that incorporates 10nmoles of dNTPs into acid-insoluble form in 30 minutes at 72° C.



|                              |            |            |
|------------------------------|------------|------------|
| PAN Hot Start DNA Polymerase | 250 units  | MB-1860250 |
|                              | 500 units  | MB-1860500 |
|                              | 5000 units | MB-1865000 |



Polymerases

PowerScript DNA Polymerase short range

Features and applications

- Ideal for problematic templates that fail with standard Taq DNA Polymerases
- Ideal for fragments up to 5 Kb in length
- Higher fidelity than Taq
- For high fidelity PCR
- Suitable for both TA and blunt-end cloning

Powerscript short DNA Polymerase is a high-performance proprietary complex of enzymes specifically designed for difficult/problematic PCR applications requiring high processivity with fidelity that would normally fail with standard Taq Polymerases. PowerScript short DNA Polymerase is recommended for short genomic DNA fragments of up to 3 Kb, or up to 5 Kb on Lambda DNA.

| Components                       | 250 Units | 500 Units  |
|----------------------------------|-----------|------------|
| PowerScript short range          | 62.5 µl   | 125 µl     |
| 10x OptiBuffer                   | 1.2 ml    | 2 x 1.2 ml |
| 50 mM MgCl <sub>2</sub> Solution | 1.2 ml    | 1.2 ml     |
| 5x Hi-Spec Additive              | 1.2 ml    | 1.2 ml     |

Reagent specifications

5x Hi-Spec Additive is a specificity enhancer. If necessary, re-dissolve Hi-Spec by heating to 70° C and vortexing.

Storage buffer

20 mM Tris-HCl, pH 7.5, 100 mM NaCl, 0.1mM EDTA, 2 mM DTT, 50% Glycerol, and stabilizers.

Storage conditions

PowerScript short DNA Polymerase can be stored for 12 months at -20° C.

|  |           |           |
|--|-----------|-----------|
| PowerScript DNA-Polymerase short range | 250 units | PAN721064 |
|  | 500 units | PAN721065 |

Associated activities

Endonuclease and exonuclease activities were not detectable after 4 hours of incubation of 1 µg of pBR322 plasmid DNA and 0.5 µg Hind III-digested Lambda DNA at 72° C in the presence of 20 units of PowerScript short.

Unit definition

One unit is defined as the amount that incorporates 10nmoles of dNTPs into acid-precipitable form in 30 minutes at 72° C.

**High specificity with problematic templates using PowerScript short.**  
A range of fragments from human genes were amplified, varying in length and GC content.

Lane 1: PANLadder II  
Lane 2: 119 bp and 43% GC product amplified from the human glucocerebrosidase gene  
Lane 3: 321 bp and 37% GC product amplified from Angiotensin receptor II gene  
Lane 4: 626 bp and 56% GC product amplified from the Rhodopsin gene  
Lane 5: 762 bp and 33% GC product amplified from the β-Globin gene  
Lane 6: 1200 bp and 54% GC product amplified from the alpha-1-antitrypsin gene  
Lane 7: PANLadder I  
Lane 8: 2256 bp and 52% GC product amplified from the p53 gene  
Lane 9: 2000 bp and 32% GC product amplified from the Angiotensin receptor II gene  
Lane 10: 6000 bp and 51% GC product amplified from the alpha-1-antitrypsin gene



Polymerases

PowerScript DNA Polymerase long range

Features and applications

- Ideal for problematic templates that fail with standard Taq DNA Polymerases
- Ideal for fragments 2 - 20 Kb in length
- Higher fidelity than Taq
- Available as a ready-to-use 2x reaction mix
- For high fidelity PCR
- Suitable for both TA and blunt-end cloning

PowerScript DNA Polymerase long range is a high-performance proprietary complex of enzymes specifically designed for difficult/ problematic PCR applications requiring high processivity with fidelity that would normally fail with standard Taq polymerases. PowerScript DNA Polymerase long range is recommended for long Genomic DNA fragments of between 2 - 20 Kb, or up to 30 Kb Lambda DNA fragments. With Lambda DNA as template, the best performance is achieved in the 2 - 20 Kb range. PowerScript long is our original widely used PowerScript formulation.

| Components                       | 250 Units | 500 Units  |
|----------------------------------|-----------|------------|
| PowerScript long range           | 62.5 µl   | 125 µl     |
| 10x OptiBuffer                   | 1.2 ml    | 2 x 1.2 ml |
| 50 mM MgCl <sub>2</sub> Solution | 1.2 ml    | 1.2 ml     |
| 5x Hi-Spec Additive              | 1.2 ml    | 1.2 ml     |

Reagent specifications

5x Hi-Spec Additive is a specificity enhancer. If necessary, re-dissolve Hi-Spec by heating to 70° C and vortexing.

Storage buffer

20 mM Tris-HCl, pH 7.5, 100mM NaCl, 0.1mM EDTA, 2 mM DTT, 50% Glycerol, and stabilizers.

Storage conditions

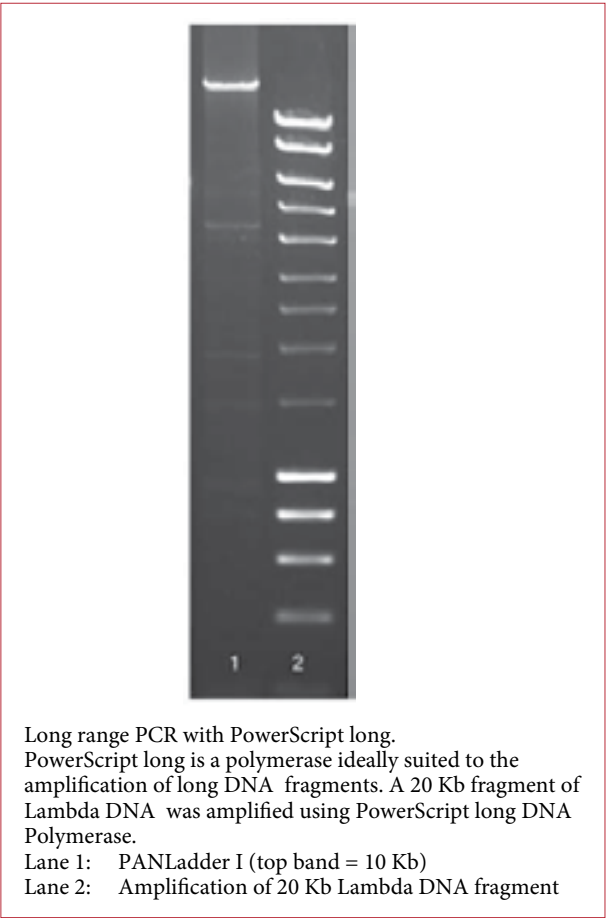
PowerScript short DNA Polymerase can be stored for 12 months at -20° C.

Associated activities

Endonuclease and exonuclease activities were not detectable after 4 hours of incubation of 1 µg of pBR322 plasmid DNA and 0.5 µg Hind III-digested Lambda DNA at 72° C in the Presence of 20 units of PowerScript long.

Unit definition

One unit is defined as the amount that incorporates 10nmoles of dNTPs into acid-precipitable form in 30 minutes at 72° C.



|                                       |           |            |
|---------------------------------------|-----------|------------|
| PowerScript DNA Polymerase long range | 250 units | MB-1120250 |
|                                       | 500 units | MB-1120500 |

Molecular Biology Reagents

Proteinase K

Features and applications

- Broad-spectrum serine protease
- Active under denaturing conditions
- Stable at high temperatures
- Molecular biology grade
- Available as powder and stabilized stock solution
- Inactivation of RNases/DNases during nucleic acid extraction
- Protein modification
- General protein digestion
- Determination of enzyme localization

Proteinase K is an enzyme used to digest most proteins in molecular-biological techniques. The enzyme may be used at 56° C for up to 4 hours, or 37° C for overnight incubations. Proteinase K solution is stabilized with a specially formulated buffer, and can be used directly from the freezer.

Recommendations for use

- Dissolve to 20 mg/ml in 50 mM Tris-HCl, 2 mM calcium acetate, pH 8.0
- Proteinase K may be used at 56° C for up to 4 hours, or 37° C for overnight incubations
- Proteinase K has an optimal pH of 7.5 - 12.0
- To remove common contaminants from nucleic acid preparations use at a working concentration of 5 µg/ml

Storage conditions

Proteinase K can be stored for 12 months at -20° C.

Contaminants

RNase Activity: No detectable ribonuclease activity detected with MS2RNA after 6 hour incubation at 37° C  
DNase Activity: No detectable nicking activity detected with pBR322 after 6 hour incubation at 37° C

Unit definition

One unit is defined as the amount of enzyme that will liberate 1.0 µmol of tyrosine per minute at 37° C, pH 7.5.

|              |        |            |
|--------------|--------|------------|
| Proteinase K | 100 mg | MB-4300002 |
|--------------|--------|------------|

PAN Ladder I

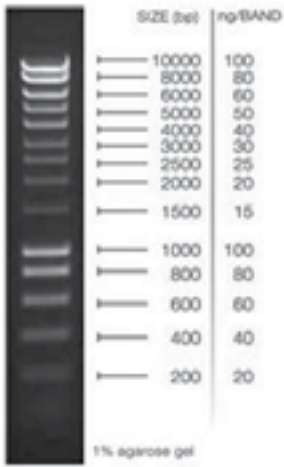
Features

- 14 bands from 200 bp - 10 000 bp
- Accurate quantitation
- Easy identification and orientation
- Ready-to-use format

PANLadder™ I is a popular ready-to-use molecular weight marker, especially designed for easy DNA quantification and size determination. This ready-to-use format reduces handling steps and saves time; simply transfer HyperLadder I from the vial to the gel. PANLadder™ I produces a pattern of 14 regularly spaced bands, ranging from 200 to 10,000 bp. To allow easy identification and orientation, the 1000 and 10,000bp bands have the highest intensity. When the standard loading volume of 5 µl per lane (720 ng of DNA) is being used, each band corresponds to a precise amount of DNA. A 5x sample loading buffer is supplied for your convenience. Under no circumstances should it be used to dilute/ load ladder.

Storage conditions

PANLadder™ I can be stored at -20° C until first use and thereafter at 2 – 8° C for up to 6 months. Avoid multiple freeze/thaw cycles.



|              |           |           |
|--------------|-----------|-----------|
| PAN Ladder I | 200 lanes | PAN733025 |
|              | 500 lanes | PAN733026 |

Molecular Biology Reagents

PAN DNA Clean

Features and applications

- Column-free PCR clean-up
- Post-PCR recovery of up to 98%
- Cost-effective, simple and rapid protocol
- Products are suitable for immediate downstream applications
- PCR clean-up
- Removes primers, primer-dimers, dNTPs and restriction enzymes
- DNA or dsRNA purification or concentration

PAN DNA Clean is a novel, inexpensive solution, which provides a column-free method for nucleic-acid purification. Using a simple and rapid procedure, PAN DNA Clean can be used to purify or concentrate DNA or dsRNA from PCR reactions or any enzymatic digests. This method is easy to follow, combining convenience, speed and excellent recovery rates.

Simple, flexible and column-free protocol

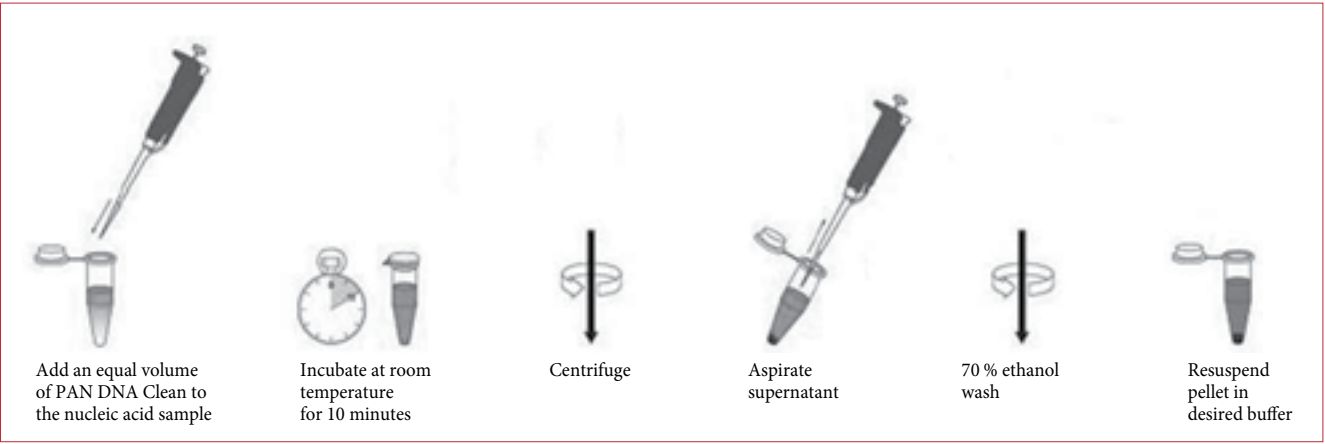
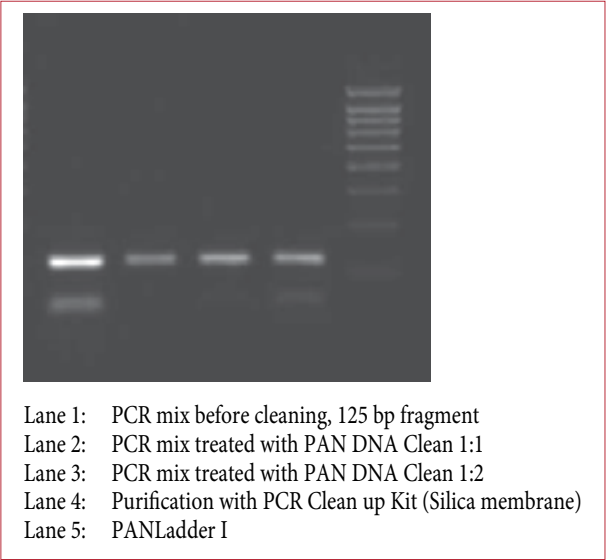
PAN DNA Clean removes proteins (such as restriction enzymes, polymerases, etc.), primers, primer-dimers and dNTPs. A very straightforward protocol allows the precipitation of nucleic acids ≥75 bp without the need for organic solvents, glass milk or expensive spin-columns. Unlike many column-based methods, PAN DNA Clean maximizes recovery with nucleic acid solutions, whether of low, medium or high concentration. PAN DNA Clean purifies nucleic acid without the use of chaotropic salts (which often contribute to denaturation of the DNA duplex). PAN DNA Clean enables the researcher to re-suspend the cleaned-up nucleic acids in any buffer and volume of choice, thus permitting the purification process to be tailored specifically to suit the experiment.

Optimized nucleic acid recovery

PAN DNA Clean has been tailored to maximize the amount of nucleic acid recovered after purification, providing up to 98% recovery of the original sample for immediate downstream applications, such as cloning and sequencing. PAN DNA Clean exhibits great versatility, achieving unsurpassed recovery rates, independently of the amount of nucleic acid or its concentration.

Storage conditions

PAN DNA Clean solution can be stored at room temperature for 12 months. Do not freeze. Avoid exposure to light.



|               |                         |                        |
|---------------|-------------------------|------------------------|
| PAN DNA Clean | 1 x 5 ml<br>2 x 12,5 ml | PAN737042<br>PAN737046 |
|---------------|-------------------------|------------------------|

Molecular Biology Reagents

Agarose (molecular grade)

Features

- DNase/RNase-free
- Excellent value and clarity
- High gel strength
- DNA/RNA electrophoresis
- Ideal for separating nucleic acids of a wide range of sizes, especially large fragments (> 10 Kb)

Agarose (DNase/RNase-free) is an extremely pure, high molecular biology grade agarose powder that has been extensively tested for RNase contamination. Agarose provides high resolution of DNA and RNA separated by electrophoresis and offers consistent resolution from lot to lot.

Storage conditions

Cool, dry place

Analytical specifications

|                                 |                          |
|---------------------------------|--------------------------|
| Appearance:                     | White crystals or powder |
| Gel strength of 1.5% (w/v) gel: | > 1220g/cm <sup>2</sup>  |
| Fusion point:                   | 88 - 90° C               |
| Gelling temperature:            | 37 - 39° C               |
| EEO:                            | 0.05 - 0.1               |
| Moisture:                       | < 7%                     |
| Sulphate:                       | < 0.06%                  |
| DNase and RNase:                | Absent                   |

|                           |       |           |
|---------------------------|-------|-----------|
| Agarose (molecular grade) | 500 g | PAN741025 |
|---------------------------|-------|-----------|

Molecular Biology Reagents

dNTP Sets

Features and applications

- Ultra-pure: > 99% tris-phosphate by HPLC
- Extended shelf-life of 24 months at -20° C
- Free from PCR inhibitors
- DNase, RNase and Nickase free

Suitable for a wide variety of applications such as:

- Standard and long range PCR assays
- cDNA synthesis
- qPCR
- Microarrays
- DNA sequencing
- DHPLC
- Labelling

A set of ready-to-use molecular grade dNTP solutions consisting of 4 separate 100mM solutions of dATP, dGTP, dCTP and dTTP. For use in DNA polymerization reactions, DNA labelling and sequencing processes. Dependable PCR grade. All dNTPs are supplied as Lithium salts in purified water at pH 7.5. Lithium salts have greater resistance to repeated freezing and thawing cycles than Sodium salts, and Lithium salt dNTP preparations remain sterile over the entire shelf life due to the bacterio-static activity of Lithium towards various microorganisms.

Storage conditions

dNTP Set can be stored for 24 months at -20° C. Avoid multiple freeze/thaw cycles. For long-term storage, aliquoting is recommended.

| Characteristics                     | dATP  | dCTP   | dGTP  | dTTP  |
|-------------------------------------|---|--|---|---|
| Product                             | dATP Lithium<br>100 mM Solution   | dCTP Lithium<br>100 mM Solution  | dGTP Lithium<br>100 mM Solution   | dTTP Lithium<br>100 mM Solution   |
| Nomenclature                        | 2'-deoxyadenosine-<br>5'-triphosphate   | 2'-deoxyadenosine-<br>5'-triphosphate  | 2'-deoxyadenosine-<br>5'-triphosphate   | 2'-deoxyadenosine-<br>5'-triphosphate   |
| Formula                             | C <sub>10</sub> H <sub>12</sub> N <sub>5</sub> O <sub>12</sub> P <sub>3</sub> Li <sub>4</sub> | C <sub>9</sub> H <sub>12</sub> N <sub>5</sub> O <sub>13</sub> P <sub>3</sub> Li <sub>4</sub> | C <sub>10</sub> H <sub>12</sub> N <sub>5</sub> O <sub>13</sub> P <sub>3</sub> Li <sub>4</sub> | C <sub>10</sub> H <sub>13</sub> N <sub>2</sub> O <sub>14</sub> P <sub>3</sub> Li <sub>4</sub> |
| Molecular Weight                    | 514.9 g/mol   | 490.9 g/mol  | 530.9 g/mol   | 505.9 g/mol   |
| λmax pH 7.0                         | 259 nm  | 272 nm   | 252 nm  | 267 nm  |
| ε at λmax @ pH7.0                   | 15.4 E x mmol <sup>-1</sup> x cm <sup>-1</sup>  | 9.1 E x mmol <sup>-1</sup> x cm <sup>-1</sup>  | 13.7 E x mmol <sup>-1</sup> x cm <sup>-1</sup>  | 9.6 E x mmol <sup>-1</sup> x cm <sup>-1</sup>   |
| A <sub>250</sub> /A <sub>260</sub>  | 0.78 ± 0.03   | 0.82 ± 0.03  | 1.16 ± 0.05   | 0.65 ± 0.03   |
| A <sub>280</sub> /A <sub>260</sub>  | 0.15 ± 0.02   | 0.98 ± 0.03  | 0.66 ± 0.03   | 0.73 ± 0.02   |
| Concentration                       | 100mM ± 2%  | 100mM ± 2%   | 100mM ± 2%  | 100mM ± 2%  |
| Appearance                          | Clear Colorless<br>Solution   | Clear Colorless<br>Solution  | Clear Colorless<br>Solution   | Clear Colorless<br>Solution   |
| pH of Solution                      | 7.5   | 7.5  | 7.5   | 7.5   |
| dNTP (HPLC Area)                    | ≥ 99 %  | ≥ 99 %   | ≥ 99 %  | ≥ 99 %  |
| dNDP (HPLC Area)                    | < 1 %   | < 1 %  | < 1 %   | < 1 %   |
| DNases, RNases,<br>Nicking Activity | Negative  | Negative   | Negative  | Negative  |
| Storage                             | at -20 ° C  | at -20 ° C   | at -20 ° C  | at -20 ° C  |
| Stability                           | ≤ 24 months   | ≤ 24 months  | ≤ 24 months   | ≤ 24 month  |

|                        |  |                        |
|------------------------|--|------------------------|
| dNTP set (dA+dC+dG+dT) | 100 mM 4 x 250 µl<br>100 mM 4 x (4 x 250 µl) | PAN739025<br>PAN739026 |
|------------------------|--|------------------------|

Molecular Biology Reagents

dNTP Mix

Features and applications

- Convenient, pre-optimized and pre-mixed
- Ultra-pure: > 99% tris-phosphate by HPLC
- Extended shelf-life of 24 months at -20° C
- Free from PCR inhibitors
- DNase, RNase and Nickase free

Suitable for a wide variety of applications such as:

- Standard and long range PCR assays
- cDNA synthesis
- qPCR
- Microarrays
- DNA sequencing
- DHPLC
- Labeling

A ready-to-use molecular grade dNTP Mix containing dATP, dCTP, dGTP and dTTP at pH 7.5 as Lithium salts in purified water. The mix is designed to save hands-on time for researchers and minimize the possibility of contamination. For use in DNA polymerization reactions, DNA labeling and sequencing processes. Dependable PCR grade. Lithium salts have greater resistance to repeated freezing and thawing cycles than Sodium salts, and Lithium salt dNTP preparations remain sterile over the entire shelflife due to the bacteriostatic activity of Lithium towards various microorganisms.

|                        |                    |                 |                  |                        |
|------------------------|--------------------|-----------------|------------------|------------------------|
| dNTP Mix (dA+dC+dG+dT) | 20 µmol<br>50 µmol | 40 mM<br>100 mM | 500 µl<br>500 µl | PAN739043<br>PAN739028 |
|------------------------|--------------------|-----------------|------------------|------------------------|

dNTP Mix Reaction Guidelines

100 mM Mix contains 25 mM of each dNTP

Reaction Volume Master Mix Reactions  
50 µl 0.5 µl 1000

40 mM Mix contains 10 mM of each dNTP

Reaction Volume Master Mix Reactions  
50 µl 1.25 µl 400

This is a guide only, for long-range applications adjust accordingly.

Storage conditions

dNTP Mix can be stored for 24 months at -20° C. Avoid multiple freeze/thaw cycles. For long-term storage, aliquoting is recommended.

Typical analysis

Lithium salts, > 99% deoxynucleoside triphosphates (HPLC, area %), < 1% deoxynucleoside monophosphates and deoxynucleoside diphosphates.

Purity

The dNTPs are > 99% pure by HPLC and are free of DNase, RNase, Protease, phosphatase and nicking activity.



# PANsys

## PANsys 3000

### Fully automated cell culture systems

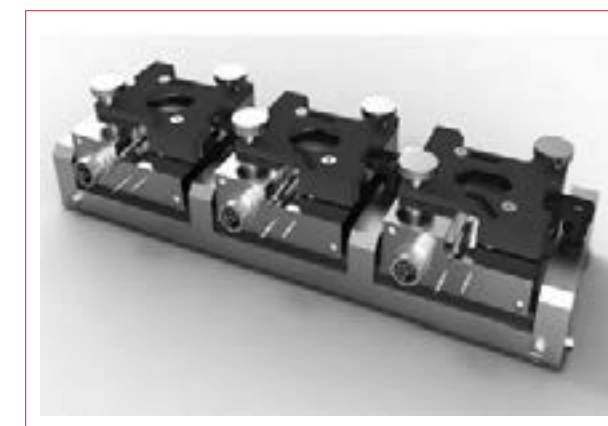
|             |         |
|-------------|---------|
| PANsys 3000 | 135-136 |
|-------------|---------|

#### Introduction

PANsys 3000 is a highly automated cell culture system that enable a significant reduction in manual processes as well as a complete control and documentation of all important cell culture parameters. Apart from an automated control and supervision of these cell culture parameters, the system offers an integrated and automated evaluation of the cells in culture, determining growth rate, metabolism, and morphology.

The specially developed, patented cell culture chambers are the core of the cell culture units. In the cell culture chambers, cells are automatically supplied with appropriate media according to the selected culture parameters.

The optics with precision control and operation are equipped with a high-resolution CCD microscope (transmitted light, phase contrast and optional 6-channel fluorescence). This microscope records images of freely selectable points in the cell culture according to specified time intervals. These images are automatically saved by software and can be evaluated online. The automated cell-culture system PANsys 3000 is a nearly universally applicable tool for a highly efficient cell culture. Miscellaneous series of tests have proven the suitability of the system for the cultivation of a multitude of cells and cell lines under widely varying conditions.



#### PANsys 3000 features

Closed supply system with automated regulation of all necessary substances (CO<sub>2</sub>, O<sub>2</sub>, media, nutrients, temperature, activating substances or test drugs).

Automated cell-culture system where various cell types, cell lines and media can be cultivated under controlled conditions.

Up to six separate cell culture chambers (multi-chamber system) with individual equipment of each chamber and automatic adjustment of pre-selected cell culture parameters.

Continuous surveillance and documentation of all relevant cell culture parameters (temperature, CO<sub>2</sub>, O<sub>2</sub>, pH) with simultaneous microscopic monitoring of cell morphology and growth rate.

Life cell imaging: continuous video-microscopic monitoring of the cells with storage, documentation and analysis. Morphological changes and growth behaviour can be quickly detected and evaluated.

High-level microscopy system with a phase contrast and multi-channel fluorescence microscope for detailed and complex microscopy applications. Individual adaptation of optical characteristics (filters, channels, etc.)

Saving and documentation of all relevant recorded data of cell cultivation, including cell culture parameters and microscope data. Automated evaluation and analysis of all culture parameters and microscope images with powerful, modern software tools.

## Notes

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| P30-1401    | 5    | P30-5500    | 5    |              |      |             |      |
| P30-1402    | 5    | P30-8100    | 5    |              |      |             |      |
| P30-1501    | 5    | P30-8500    | 5    |              |      |             |      |
| P30-1502    | 5    | P-3340002   | 120  |              |      |             |      |
| P30-1505    | 5    | P-3610002   | 116  |              |      |             |      |
| P30-1506    | 5    | P-3860001   | 119  |              |      |             |      |
| P30-1701    | 5    | P-3860002   | 119  |              |      |             |      |
| P30-1702    | 5    | P40-1301    | 7    |              |      |             |      |
| P30-1905    | 10   | P40-1302    | 7    |              |      |             |      |
| P30-1906    | 10   | P40-1401    | 7    |              |      |             |      |
| P30-1908    | 10   | P40-1402    | 7    |              |      |             |      |
| P30-1909    | 10   | P40-37100   | 6    |              |      |             |      |
| P30-1981    | 10   | P40-37500   | 6    |              |      |             |      |



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