# Non-Animal Cell Culture Products and Applications

*Updated November 2016. Please note that this list is not comprehensive and not an endorsement of the companies. Listed products may change.

## Contents

| Cell Type<br>Medium Composition | Reference | Supplier | Product Link | Comments |
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| **Adipocytes** | | | | |
| Cryopreserved in DMEM–Polyvinylpyrollidone (PVP) solutions (PVP concentration of 10%) and DMEM–Methyl Cellulose (MC) solutions (MC concentration of 1%). | Cryopreservation of stromal vascular fraction of adipose tissue in a serum-free freezing medium. | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/d5030?lang=en&region=GB | Media were prepared by dissolving weighed PVP and MC in DMEM at room temperature and the solutions were then stored overnight at 4°C to obtain a homogeneous preparation.<br>**Animal Free.** |
| DMEM plus Methyl Cellulose (Methocel® MC, viscosity of 3,000–5,500 mPa·s for 2% in water, 20°C) (MC concentration of 1%) and DMSO (average molecular weight: 78.14). | Evaluation of methylcellulose and dimethyl sulfoxide as the cryoprotectants in a serum-free freezing media for cryopreservation of adipose-derived adult stem cells. | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/d5030?lang=en&region=GB | DMSO was used as received while MC was autoclaved at 121°C for 30 min before being added to DMEM. The DMEM-MC solutions were prepared by dissolving weighted MC in DMEM at ~60°C, followed by vortexing for 30 min, and the solutions were then stored overnight at 4°C to obtain a homogeneous preparation.<br>**Animal Free.** |
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| **BHK cells (Baby Hamster Kidney)** | | | | |
| MP-BHK - With inorganic salts, essential and non-essential amino acids, vitamins, recombinant human protein and growth factors, other organic compounds and trace elements. Very low protein (< 120 ng/ml). | - | www.mpbio.com | http://www.mpbio.com/product.php?pid=0920130 | Medium developed specifically for culture of BHK cells.<br>**Animal Free.** |
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| **CHO (Chinese Hamster Ovary)** | | | | |
| Cellvento™ CHO Cell Culture Media and Feeds. | Benchmarking of commercially available CHO cell culture media for antibody production. | www.millipore.com | https://www.emdmillipore.com/US/en/products/biopharmaceutical-manufacturing/upstream-processing/cell-culture/cell-culture-media/cellvento-cho-cell-culture-media-and- | Medium to support cell growth and productivity for CHO suspension cell types such as CHO-S, CHO-DHFR- and CHO-K1 cells, but may also be suitable for other cell lines. |

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| | | | feeds/NBCb.qB.Rq4AAAFAkf4.1Zwn,nav | Flexibility in application: batch, fed-batch and perfusion. **Animal Free.** |
| ProCHO - Three different media systems. Protein-free. Very low levels of recombinant insulin. | Benchmarking of commercially available CHO cell culture media for antibody production. | www.lonza.com | http://www.lonza.com/products-services/bio-research/cell-culture-products/specialty-media/cho-expression-media/procho-protein-free-cho-medium.aspx | Medium developed specifically to facilitate the production and downstream processing of recombinant proteins expressed in CHO cells. Supports high-density cultures. **Animal Free.** |
| ChoMaster HTS medium, art. CHTS - Free of proteins, peptides, complex additives such as albumines, hydrolysates and yeast extracts. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=chomaster-2 | Medium for transfection and selection of CHO cells. Long-term storage of pre-selected, protein and peptide-free growing CHO cells. **Animal Free.** |
| ChoMaster HP-1 medium, art. CHP1 - Free of proteins, peptides, complex additives such as albumines, hydrolysates and yeast extracts. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=chomaster-2 | Medium for routine maintenance of CHO cells in simple static or agitated culture systems. **Animal Free.** |
| ChoMaster HP-5 medium, art. CHP5 - Free of proteins, peptides, complex additives such as albumines, hydrolysates and yeast extracts. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=chomaster-2 | Medium for cultivation of CHO cells in agitated culture systems. This nutrient mixture is often combined with ChoMaster HP-1 when the culture process has to be accomplished within extremely short periods of time. **Animal Free.** |
| ChoMaster HP-6 medium, art. CHP6 - Free of proteins, peptides, complex additives such as albumines, hydrolysates and yeast extracts. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=chomaster-2 | Medium for the production of recombinant glycoproteins in fed batch culture processes. **Animal Free.** |
| CD CHO - Contains no proteins or peptide components of animal, plant, or synthetic origin, as well as no undefined lysates or hydrolysates. | Optimized nutrient additives for fed-batch cultures. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/10743029 | Medium for growth and expression of recombinant proteins in suspension culture. **Animal Free.** |
| CD OptiCHO - Protein-Free. | Amino acid consumption in naïve and recombinant CHO cell cultures: producers of a monoclonal antibody. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/12681011 | Medium specifically designed to offer high performance and yield with recombinant CHO cells in a |

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| | | | | chemically defined fed-batch environment.<br>**Animal Free.** |
| CD FortiCHO - Protein-Free. | Benchmarking of commercially available CHO cell culture media for antibody production. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/A1148301 | Medium for batch and fed-batch culture of recombinant CHO cells.<br>**Animal Free.** |
| CD CHO AGT - contains no proteins or peptide components of animal, plant, or synthetic origin, as well as no undefined lysates or hydrolysates. | Discovery of a mammalian splice variant of myostatin that stimulates myogenesis. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/12490025 | Medium optimised for the growth of CHO cells and expression of recombinant proteins in suspension culture.<br>**Animal Free.** |
| Free-style CHO Expression medium - Protein-free medium. Formulation without hypoxanthine and thymidine for use with or without dhfr systems. | - | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/126510222 | Medium supports the growth and transient transfection of CHO-S cells in suspension without adaptation.<br>**Animal Free.** |
| ExpiCHO™ Expression Medium – Protein-Free. | - | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/A2910004 | Medium designed for high-density growth and transfection of suspension-adapted CHO cells.<br>**Animal Free.** |
| CD DG44 Medium - Protein-Free. | Effects of peptone supplementation in different culture media on growth, metabolic pathway and productivity of CHO DG44 Cells; a new insight into amino acid profiles. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/12610010 | Medium optimized for the growth of CHO cells and expression of recombinant proteins in suspension culture.<br>**Animal Free.** |
| HyQ® CDM4CHO - Does not contain Phenol red. Available without L-glutamine to support the GS gene expression system. | Rapid establishment of CHO cell lines producing the anti-hepatocyte growth factor antibody SFN68. | https://promo.gelifesciences.com/gl/hyclone | https://promo.gelifesciences.com/gl/hyclone/product/hyclone-cdm4cho-media-liquid.html<br><br>https://promo.gelifesciences.com/gl/hyclone/product/hyclone-cdm4cho-media-powder.html | Medium developed to increase the process yields for the industrial manufacture of recombinant proteins using a variety of CHO cell clones.<br>**Animal Free.** |
| IS CHO-CD XP | Study of a recombinant CHO cell line producing a monoclonal antibody by ATF or TFF external filter perfusion in a WAVE Bioreactor™. | www.irvinesci.com | http://www.irvinesci.com/products/91120-is-cho-cd-xp-liquid-chemically-defined-medium?dpt=Industrial+Cell+Culture | Growth medium designed to support excellent cell growth and production of recombinant CHO cell lines.<br>**Animal Free.** |
| BalanCD® CHO Growth A Medium | Benchmarking of commercially available CHO cell culture media for antibody production. | www.irvinesci.com | http://www.irvinesci.com/products/91128-balancd-cho-growth-a-medium-liquid | Medium designed to increase process yields of antibodies and recombinant proteins in CHO cells. |

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| | | | | **Animal Free.** |
| BalanCD® Transfectory™ CHO | - | www.irvinesci.com | http://www.irvinesci.com/products/91147-balancdreg-transfectorytrade-cho-liquid?dpt=Industrial+Cell+Culture | The system supports small- and large-scale transient transfection in CHO cells, enabling scientists to use the same medium before and after transfection.<br>**Animal Free.** |
| EX-CELL® ACF CHO - Contains inorganic salts, HEPES, sodium bicarbonate, amino acids, vitamins, recombinant human insulin, plant hydrolysates, organic compounds, trace elements and surfactants. Without antibiotics, antimycotics, L-glutamine or transferrin. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c5467?lang=en&region=GB | Medium for growth and protein expression in suspension cultures of CHO cells. Supports and maintains high cell densities for extended periods.<br>**Animal Free.** |
| EX-CELL® CD CHO - EX-CELL CD CHO is formulated with hypoxanthine and thymidine, making it an appropriate medium for applications that do not require the selective pressure of a hypoxanthine/thymidine (HT)-deficient medium, such as CHO-K1 and Glutamine Synthetase (GS System™) users. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/14361c?lang=en&region=US | Medium for long-term growth of CHO cells and expression of antibodies or protein products in suspension cultures.<br>**Animal Free.** |
| EX-CELL®CD CHO-3 | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c1490?lang=en&region=US | Medium for growth and protein expression in CHO cells. Supports rapid initial cell growth and high levels of protein expression in suspension cultures. Supports and maintains high cell densities for extended periods.<br>**Animal Free.** |
| EX-CELL®CHO Cloning Medium - Contains inorganic salts, sodium bicarbonate, amino acids, vitamins, trace elements, plant hydrolysates, and other organic compounds. Without antibiotics, antimycotics, L-glutamine, insulin or transferrin. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c6366?lang=en&region=US | Medium designed for single-cell cloning of recombinant CHO cell lines adapted to serum-free suspension culture.<br>**Animal Free.** |

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| EX-CELL® CHO DHFR - Contains inorganic salts, HEPES, sodium bicarbonate, amino acids, vitamins, recombinant human insulin, plant hydrolysates, other organic compounds, trace elements and surfactants. Without antibiotics, antimycotics, L-glutamine or transferrin. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c8862?lang=en&region=US | Medium formulated to maximize cell growth and recombinant protein production using the Dihydrofolate Reductase (DHFR) gene amplification system in DHFR-Chinese Hamster Ovary (CHO) cells. **Animal Free.** |
| CHO Feed Bioreactor Supplement | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c1615?lang=en&region=US | Medium formulated to optimize CHO cell growth and recombinant protein production in fed-batch bioreactor cultures. **Animal Free.** |
| EX-CELL® CHO 5 Medium - Contains inorganic salts, HEPES and sodium bicarbonate buffers, essential and non-essential amino acids, vitamins, recombinant human insulin, plant hydrolysates, other organic compounds, trace elements, and surfactants. Does not contain antibiotics, antimycotics, L-glutamine, or transferrin. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/c0363?lang=en&region=US | Medium optimized for high protein production as well as superior expansion of CHO cells. **Animal Free.** |
| Corning® PF Medium - Protein-free medium, without hormones or growth factors. | - | www.cellgro.com | http://cellgro.com/corning-pf-medium.html | Medium supports superior growth and viability over long term passages in both adherent and suspension culture, and is formulated without L-glutamine. **Animal Free.** |
| Ham´s F-12 Medium | - | www.cellgro.com | http://cellgro.com/ham-s-f-12-medium-2.html<br><br>http://cellgro.com/ham-s-f-12-medium-powder-1.html | Medium originally formulated for the serum-free culture of CHO cells, and is based on Ham's F-10 medium with increased concentrations of choline, inositol, putrescine, and several amino acids. This medium is also suitable for carcinoma cells, rat skeletal myoblasts, Chinese hamster lung cells, and rat, rabbit, and chicken embryos. This formulation contains L-glutamine. |

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| | | | | **Animal Free.** |
| 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. | Tumor cell-selective apoptosis induction through targeting of KV10.1 via bifunctional TRAIL antibody. | www.panbiotech.com | http://www.pan-biotech.com/en/serum-free-systems/serum-free-media/panserin-c6000 | Medium for cultivation of CHO-cells and their recombinant derivatives in suspension culture for the production of recombinant proteins for diagnostics or therapeutic purposes.<br>**Animal Free.** |
| FortiCHO medium - fortified to support maximal recombinant CHO cell growth and protein expression in suspension batch culture, offering 120% greater growth and production than select competitive media with simple glucose supplementation. Supplemented with Cell-Ess ®. | Novel Cell-Ess ® supplement used as a feed or as an initial boost to CHO serum free media results in a significant increase in protein yield and production. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/A1148301?ICID=search-product | Medium designed to support recombinant CHO cell growth and protein expression in suspension batch culture. Cells were seeded in shake flasks. Cell-Ess was given as a supplement independent of other supplements and in addition to normal feeds at increasing concentrations. Cell-Ess was either added at the beginning of culture for protein expression or added as a feed as indicated.<br>**Animal Free.** |
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| **Epithelial cells** | | | | |
| CnT-Prime, Epithelial Culture Medium, Human - #CnT-PR is a low calcium formulation. | - | www.cellntec.com | http://cellntec.com/products/cnt-pr/#datasheet | Medium for isolation and expansion of epithelial cells from skin, cornea, oral, mammary, and bladder tissue.<br>**Animal Free.** |
| CnT-Prime Airway, Epithelial Culture Medium, Human - #CnT-PR-A is a low calcium formulation. | - | www.cellntec.com | http://cellntec.com/products/cnt-pr-a/#datasheet | Medium for isolation, growth, and longevity of primary epithelial cells.<br>**Animal Free.** |
| CnT-Prime Airway Differentiation, Epithelial Culture Medium, Human - #CnT-PR-AD is a low calcium formulation. | - | www.cellntec.com | http://cellntec.com/products/cnt-pr-ad/#datasheet | Medium for differentiation of primary epithelial cells.<br>**Animal Free.** |
| Mammary, PCT Epithelium Medium, Defined, Human - #CnT-27 is a progenitor cell targeted liquid culture medium kit including both basal medium and | Regulation of DNA methyltransferase 1 transcription in BRCA1-mutated breast cancer: a novel crosstalk between E2F1 motif hypermethylation and loss | www.cellntec.com | http://cellntec.com/products/previous/p-mammary/ | Discontinued - available on request. Medium for isolation and Growth of Human Mammary Epithelium.<br>**Animal Free.** |

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| separate supplements. BPE-free formulation. | of histone H3 lysine 9 acetylation. | | | |
| 70% DMEM containing 4.5 g/L D-glucose, 30% F12 nutrient mixture containing L-glutamine, and 1% antibiotic–antimycotic solution - supplemented with either 2% B27 or 1% or 2% N2. | A novel serum-free method for culturing human prenatal retinal pigment epithelial cells. | www.thermofisher.com/ | https://www.thermofisher.com/order/catalog/product/11965092?ICID=search-product<br><br>https://www.thermofisher.com/order/catalog/product/11765054?ICID=search-product | **Animal Free.** |
| DMEM/F12 medium supplemented with N2 supplement, 10 ng/ml human recombinant bFGF and 10 ng/ml EGF. | - | www.thermofisher.com/ | https://www.thermofisher.com/order/catalog/product/11320033?ICID=search-product | Basal medium for supporting the growth of many different mammalian cells.<br>**Animal Free.** |
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| **Fibroblasts** | | | | |
| 80% DMEM with 20% SR; or 20% human serum, 2 mM L-glutamine, 0.1 mM β-mercaptoethanol, and 1% nonessential amino acid stock. | Human feeder layers for human embryonic stem cells. | https://www.thermofisher.com/ | https://www.thermofisher.com/order/catalog/product/41965062?ICID=search-product | **Animal Free.** |
| Fibroblast Growth Supplement-animal component free | - | http://www.sciencellonline.com | http://www.sciencellonline.com/products-services/media/fibroblast-growth-supplement-animal-component-free.html | Medium supplement designed for the optimal growth of normal human fibroblasts in vitro.<br>**Animal Free.** |
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| **HEK 293 cells (Human Embryonic Kidney)** | | | | |
| Freestyle 293 Expression Medium supplemented with 0.1% Pluronic F-68. | Scalable serum-free production of recombinant adeno-associated virus type 2 by transfection of 293 suspension cells. | https://www.thermofisher.com/ | https://www.thermofisher.com/order/catalog/product/12338018 | Medium developed to support the growth and transfection of 293-F cells under suspension type culture conditions.<br>**Animal Free.** |
| Serum-free VP-SFM medium with 4 mM L-glutamine supplementation. | Vero-cell rabies vaccine produced using serum-free medium. | https://www.thermofisher.com/ | https://www.thermofisher.com/order/catalog/product/11681020?ICID=search-product | **Animal Free.** |
| Hector G, art. HEKG - Protein free medium. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=hektor | Medium for routine maintenance and cryopreservation. Hektor media are available as 1X liquid preparations ready-for-use as well as kits of highly concentrated liquid |

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| | | | | solutions for the reconstitution of 4, 8, 20, 200, and 2000 litres 1X medium. The liquid concentrates have to be reconstituted with tissue culture water prior to sterile filtration.<br>**Animal Free.** |
| Hektor S, art. HEKS - Protein free medium. | - | www.cellculture.com | http://www.cellculture.com/?portfolio=hektor | Medium for production of recombinant proteins upon transient transfection of HEK 293, HEK 293EBNA, and HEK 292T cells. Hektor media are available as 1X liquid preparations ready-for-use as well as kits of highly concentrated liquid solutions for the reconstitution of 4, 8, 20, 200, and 2000 litres 1X medium. The liquid concentrates have to be reconstituted with tissue culture water prior to sterile filtration.<br>**Animal Free.** |
| CDM4HEK293™ - Protein-Free cell culture medium. With 4 mmol/L GlutaMax, 10 mmol/L HEPES and 1 mmol/L sodium pyruvate. | High yield and efficient expression and purification of the human 5-HT3A receptor. | https://promo.gelifesciences.com/gl/hyclone/ | https://promo.gelifesciences.com/gl/hyclone/product/hyclone-cdm4hek293-media.html | Medium for the growth of HEK 293 cultures and adenovirus and recombinant protein production. Developed to support high cell density in suspension cultures.<br>**Animal Free.** |
| SFM4Transfx-293™ | Production of recombinant adeno-associated virus vectors using suspension HEK293 cells and continuous harvest of vector from the culture media for GMP FIX and FLT1 clinical vector. | https://promo.gelifesciences.com/gl/hyclone/ | https://promo.gelifesciences.com/gl/hyclone/product/hyclone-sfm4transfx-293-media.html | Medium for the growth of HEK 293 cultures and transfection using lipofection or similar methods. Supports high transfection efficiency, productivity, and cell density in suspension cultures.<br>**Animal Free.** |
| SFM4HEK293™ - Protein-free medium. Contains L-glutamine and Pluronic® F-68, does not contain phenol red. | - | https://promo.gelifesciences.com/gl/hyclone/ | https://promo.gelifesciences.com/gl/hyclone/product/hyclone-sfm4hek293-media.html | Medium designed to support the growth of HEK 293 cells and the production of adenoviral vectors and proteins.<br>**Animal Free.** |
| 293-SFM II - Very low protein concentration. | - | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/11686029 | Medium developed to adapt and support the growth of 293 cells in suspension. |

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| | | | | **Animal Free.** |
| CD 293 - Protein-Free medium. Devoid of undefined lysates or hydrolysates. | - | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/11913019 | Medium developed to adapt and support the growth of 293 cells in suspension. **Animal Free.** |
| CD 293 AGT - dry granular format of CD 293 medium. | - | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/12529012 | Medium developed to adapt and support the growth of 293 cells in suspension. **Animal Free.** |
| IS-293-V - Requires supplementation with L-glutamine and iron chelate. | - | www.irvinesci.com | http://www.irvinesci.com/products/91107-is-293-v-animal-component-free-medium-liquid | Medium optimised for long-term, high-density culture of 293 cells for production or adenovirus or recombinant protein expression. **Animal Free.** |
| Pro293s-CDM and Pro293a-CDM - Contains very low levels of recombinant human insulin. Without L-glutamine or phenol red. With Pluronic F-68. | Interplay between T cell receptor binding kinetics and the level of cognate peptide presented by major histocompatibility complexes governs CD8+ T cell responsiveness. | www.lonza.com | http://www.lonza.com/products-services/bio-research/cell-culture-products/specialty-media/hek293-vero-mdck-expression-media/pro293-cd-serum-free-medium-for-293-cells-with-pluronic-without-l-glutamine-and-phenol-red.aspx | Medium optimized to support high-density growth and recombinant protein production in 293 neonatal kidney cells. Pro293s-CDM for suspension cultures and Pro293a-CDM for adherent cultures. **Animal Free.** |
| EX-CELL™ 293 - Available with or without L-glutamine and sodium bicarbonate. | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/14571c?lang=de&region=DE<br><br>http://www.sigmaaldrich.com/catalog/product/sigma/24571c?lang=de&region=DE | Medium for long-term growth of HEK-293 and related cells for adenovirus production in suspension culture. **Animal Free.** |
| EX-CELL® GTM-3 - Complete, ready-to-use medium that requires only the addition of L-glutamine. | Establishment of higher passage PER.C6 cells for adenovirus manufacture. | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/g9916?lang=de&region=DE | Medium for growing HEK-293 cells, retinoblastoma-like cells, and propagation of adenoviruses. Supports growth of cells in suspension culture. **Animal Free.** |
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| **HeLa Cells** | | | | |
| EX-CELL® HeLa Serum-Free Medium | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/14591c?lang=de&region=DE | Medium developed for the long-term growth of HeLa cells in suspension culture. |

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| | | | | **Animal Free.** |
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| **Hematopoietic Cells** | | | | |
| StemSpan™-ACF with STEMspan Megakaryocyte Expansion Supplement | Scalable generation of universal platelets from human induced pluripotent stem cells. | www.stemcell.com | http://www.stemcell.com/en/Products/All-Products/StemSpanACF.aspx | Medium for expansion of hematopoietic cells. **Animal Free.** |
| StemSpan™ H3000 | Stat3 signaling in acute myeloid leukemia: ligand-dependent and -independent activation and induction of apoptosis by a novel small-molecule Stat3 inhibitor. | www.stemcell.com | https://www.stemcell.com/products/stemspan-h3000.html | Medium developed for the culture and expansion of human hematopoietic cells. **Animal Free.** |
| Serum-free MSCGM-CD - contains human albumin, recombinant human insulin, pasteurized human transferrin, HEPES, and L-glutamine. | Human mesenchymal stem cells display reduced expression of CD105 after culture in serum-free medium. | www.lonza.com | http://www.lonza.com/products-services/bio-research/stem-cells/adult-stem-cells-and-media/human-mesenchymal-stem-cells-media/therapeak-mscgm-cd-mesenchymal-stem-cell-medium-chemically-defined.aspx | Medium designed to proliferate human bone marrow derived mesenchymal cells in an undifferentiated state. **Animal Free.** |
| PowerStem MSC1 - contains salts, amino acids, trace elements, hormones, growth factors, and enriched human proteins and lipids. | Human mesenchymal stem cells display reduced expression of CD105 after culture in serum-free medium. | www.pan-biotech.de/en/ | http://www.pan-biotech.de/en/serum-free-stem-cell-media/powerstem-msc1 | Medium for the cultivation and proliferation of human mesenchymal stem cells. **Animal Free.** |
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| **Hybridomas and Myelomas** | | | | |
| Corning® hybrigro™ SF - Formulated with glutagro to provide a stable, ready to use formulation. No glutamine supplementation required. Contains Polaxamer 188 to provide shear force protection during agitated suspension culture. Formulated without phenol red. Contains low concentrations of highly purified non-animal origin recombinant proteins added for enhanced cell | - | www.cellgro.com | http://cellgro.com/products/serum-free-and-specialty-media/hybrigro.html | Medium developed for serum-free growth and antibody production with a variety of hybridoma cell lines. **Animal Free.** |

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| growth and productivity. There are no undefined hydrolysates, ultra filtered lysates, or peptides in the formulation. | | | | |
| HyClone™ ADCF-MAb media – without L-Glutamine (HyClone) plus L-Glutamine (200 mM) with LS 250 or LS 1000 Lipid Supplement (HyClone), or (Alternative) SyntheChol™ Cholesterol Supplement (Sigma) and Fatty Acid Supplement (Sigma) | Glycosylation and post-translational modification gene expression analysis by DNA microarrays for cultured mammalian cells. | https://promo.gelifesciences.com/gl/hyclone/ | https://promo.gelifesciences.com/gl/hyclone/product/hyclone-adcf-mab-media.html | Medium developed to increase the process yields for the manufacture of antibodies and antibody fragments for therapeutic use in a variety of engineered hybridoma and recombinant myeloma cell lines.<br>**Animal Free.** |
| BD Cell™ MAb Media, Quantum Yield - Requires supplementation. Contains L-glutamine and phenol red. Without pluronic acid or other surfactants. | - | www.bd.com | http://catalog.bd.com/nexus-ecat/getProductDetail?productId=220511&parentCategory=1211&parentCategoryName=Microbiology%20Testing&categoryId=1269&categoryName=Dehydrated%20Culture%20Media&searchUrl= | Medium supports a wide variety of myeloma fusion partners and hybridomas. Designed to enhance monoclonal antibody production.<br>**Animal Free.** |
| BD Cell™ MAb Media - complete medium, contains L-glutamine and is supplemented with 0.3% BD Difco™ Select Soytone, an enzymatic digest of soy. Does not contain phenol red, Pluronic® F68 (Kolliphor® P188), or other surfactants, or attachment factors. | Targeting malignant B cells with an immunotoxin against ROR1. | www.bd.com | http://catalog.bd.com/nexus-ecat/getProductDetail?productId=220513&parentCategory=1211&parentCategoryName=Microbiology+Testing&categoryId=1269&categoryName=Dehydrated+Culture+Media | Medium supports a wide variety of myeloma fusion partners and hybridomas.<br>**Animal Free.** |
| EX-CELL® CD Hybridoma Medium - with sodium bicarbonate, without L-glutamine | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/h4409?lang=en&region=GB | Medium supports rapid initial cell growth and high levels of antibody expression. It also supports high cell densities at high viability for extended periods without the use of animal-derived proteins.<br>**Animal Free.** |
| EX-CELL® NS0 - Without L-glutamine. Available with or without sodium bicarbonate. With Synthechol supplement | Adaptation of cholesterol requiring NS0 cells to serum free culture conditions. | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/14650c?lang=de&region=DE | Medium developed for the long-term growth of NS0-related cells in suspension culture.<br>**Animal Free.** |

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| | | | http://www.sigmaaldrich.com/catalog/product/sigma/24651c?lang=de&region=DE | |
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| **Lymphocytes** | | | | |
| Optmizer T-cell expansion SFM – complete and xeno-free medium | Performance of serum-supplemented and serum-free media in IFNgamma Elispot Assays for human T cells. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/A1048501 | Developed for growth and expansion of human T lymphocytes. **Animal Free.** |
| Stemline® T Cell Expansion Medium - Contains human serum albumin and transferrin. Without antibiotics or cytokines. Supplemented with L-glutamine (4mM), penicillin (100 U/mL), streptomycin (100 µg/mL), and human recombinant IL-2 (hIL-2; 50 U/mL). | - | www.sigmaaldrich.com | http://www.sigmaaldrich.com/catalog/product/sigma/s1694?lang=en&region=GB | Medium developed to promote the optimal expansion of adult human T cells. **Animal Free.** |
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| **MDCK cells** | | | | |
| MP-MDCK - Contains inorganic salts, amino acids, peptide supplements of plant origin, vitamins, recombinant human protein and growth factors. Requires L-glutamine. | - | www.mpbio.com | http://www.mpbio.com/product.php?pid=0920133&country=222 | MP-MDCK™ was designed for both research and production applications involving MDCK cells. **Animal Free.** |
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| **Stem Cells** | | | | |
| KnockOut™ DMEM supplemented with 15% KnockOut™ Serum Replacement XenoFree (KSR XF), 1% GlutaMAX™-I, 1X KnockOut™ SR XenoFree GF Cocktail, 0.1 mM 2-mercaptoethanol and 20 ng/ml basic fibroblast growth factor. | Xenofree culture systems for stem cells | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/10829018 | Medium for growth of Human ES (Embryonal Stem) cell lines I-6, I-3, and H-9 cells. **Animal Free.** |

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| Dulbecco's modified Eagle's medium:Ham's F-12 medium, supplemented with L-glutamine (final concentration 4.0 mM) and 0.1% v/v lipid concentrate, 20.5 mM sodium bicarbonate, 4.9 mM HEPES, 4.01 µM insulin, 0.318 µM transferrin, 55.9 µM putrescine, 17.8 nM progesterone, 1.0 mg/ml fetuin, 100 nM hydrocortisone and 197.6 µM L-ascorbic acid-2-phosphate, 4.0 mg/ml human serum albumin, 2.0 ng/ml basic fibroblast growth factor and 1.0 ng/ml transforming growth factor-β1. | Human mesenchymal stem cell culture: rapid and efficient isolation and expansion in a defined serum-free medium. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/11320033?ICID=search-product | Medium for growth of human Mesenchymal Stem Cells. **Animal Free.** |
| DMEM base for each serum-free medium supplemented with 100U/ml penicillin, 100ug/ml streptomycin and 0.25ug/ml amphotericin B. SFM#1 supplemented with 1% ITS-X and 100 µg/ml of Embryotrophic Factor (ETF) ; SFM#2: supplemented with 1% Insulin-Transferrin-Selenium-X (ITS-X); SFM#3 supplemented with 100 µg/ml ETF; and SFM#4 supplemented with 100 µg/ml ETF, 1mM Sodium Pyruvate, 25µg/ml Ascorbic Acid and 4ng/ml FGF-a. | Expression of multiple stem-cell markers in dental-pulp cells cultured in serum-free media. | www.thermofisher.com | https://www.thermofisher.com/order/catalog/product/11960044 | Dental mesenchymal cells were grown in four types of serum-free medium consisting of DMEM with antibiotic and antimycotic additives. **Animal Free.** |
| mTeSR1 medium | A novel serum-free monolayer culture for orderly hematopoietic differentiation of human pluripotent cells via mesodermal progenitors. | www.stemcell.com | https://www.stemcell.com/products/mtesr1.html | Medium for purposes ranging from derivation to differentiation for human embryonic stem cells and induced pluripotent stem cells. **Animal Free.** |
| Mesenchymal Stem Cell Medium-animal component free supplemented with 5 ml of Mesenchymal Stem Cell Growth Supplement-animal component | - | http://www.sciencellonline.com | http://www.sciencellonline.com/products-services/media/mesenchymal-stem-cell-medium-animal-component-free.html | Medium designed for growth of normal mesenchymal stem cells. **Animal Free.** |

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| free (MSCGS-acf, Cat. #7572) and 5 ml of penicillin/streptomycin solution (P/S, Cat. #0503). | | | | |