

March 2, 2022

MSC NutriStem® XF Medium Scientific References

- **Clinical Trials**
- **Extracellular Vesicles and Exosomes**
- **Publications**

Clinical Trials

1. E. Atanasova, et al. **Normal ex vivo mesenchymal stem cell function combined with abnormal immune profiles sets the stage for informative cell therapy trials in idiopathic pulmonary fibrosis patients.** *Stem Cell Res Ther*, 2022. <https://doi.org/10.1186/s13287-021-02692-0>
2. G. C. Blitzer, et al. **A Pilot Study to Assess the Salivary Gland Regenerative Potential of Bone Marrow Mesenchymal Stromal Cells from Treated Head and Neck Cancer Patients.** *stem cell research & therapy*, 2021, DOI: 10.21203/rs.3.rs-965122/v1
2. Y. Matsuo, et al. **Isolation of adipose tissue-derived stem cells by direct membrane migration and expansion for clinical application.** *Human Cell* (2021). <https://doi.org/10.1007/s13577-021-00505-3>
3. T. Iwanaka, et al. **A model study for the manufacture and validation of clinical-grade deciduous dental pulp stem cells for chronic liver fibrosis treatment.** *Stem Cell Res Ther* 11, 134 (2020). <https://doi.org/10.1186/s13287-020-01630-w>
4. V.T. Hoang, et al. **Expansion of Human Mesenchymal Stromal/Stem Cells Using Standardized Xeno-Free, Serum-Free Culture Condition.** *blood*, Volume 134, Issue Supplement_1, November 13 2019, <https://doi.org/10.1182/blood-2019-132140>
5. C. Bozkurt, et al. **The Use of Allogeneic Mesenchymal Stem Cells in Childhood Steroid-Resistant Acute Graft-Versus-Host Disease: A Retrospective Study of a Single-Center Experience.** *tjh*, 2019, 2019.0090 ;36:186-192
6. D. Ben-David, et al. **Autologous cell-coated particles for the treatment of segmental bone defects—a new cell therapy approach.** *Journal of Orthopaedic Surgery and Research*, volume 14, Article number: 198 (2019)
7. L.A. McIntyre et. al. **Cellular Immunotherapy for Septic Shock. A Phase I Clinical Trial.** *American Journal of Respiratory and Critical Care Medicine*, Vol. 197, No. 3, 2018
8. K. Schlosser et al. **Effects of Mesenchymal Stem Cell Treatment on Systemic Cytokine Levels in a Phase 1 Dose Escalation Safety Trial of Septic Shock Patients.** *Critical Care Medicine*, doi:10.1097/CCM.00000000000003657

Extracellular Vesicles and Exosomes

1. L. Xiang, et. al. **Exosomes from human umbilical cord mesenchymal stem cells inhibit ROS production and cell apoptosis in human articular chondrocytes via the miR-100-5p/NOX4 axis.** July 2021, *Cell Biology International*. <https://doi.org/10.1002/cbin.11657>
2. M. A. Skylar-Scott, et al. **Biomufacturing of organ-specific tissues with high cellular density and embedded vascular channels.** *Sci. Adv.* 2019.
3. Y. Li, et al. **Mesenchymal Stem Cells and Acellular Products Attenuate Murine Induced Colitis.** *Stem Cell Research & Therapy*. 03 Sep, 2020 DOI:10.21203/rs.3.rs-65529/v1
4. K. Narbutė, et al. **Time-Dependent Memory and Gait Improvement by Intranasally-Administered Extracellular Vesicles in Parkinson's Disease Model Rats.** *Cellular and Molecular Neurobiology*, 5 May 2020 <https://doi.org/10.1007/s10571-020-00865-8>
5. X. Wang, et al. **Exosomes influence the behavior of human mesenchymal stem cells on titanium surfaces.** *Biomaterials*, 24 October 2019, <https://doi.org/10.1016/j.biomaterials.2019.119571>
6. J.W Li, et al. **Mesenchymal stromal cells-derived exosomes alleviate ischemia/reperfusion injury in mouse lung by transporting anti-apoptotic miR-21-5p.** *European Journal of Pharmacology*, 2019
7. Z. Zhu, et al. **Exosomes derived from human umbilical cord mesenchymal stem cells accelerate growth of VK2 vaginal epithelial cells through MicroRNAs in vitro.** *Human Reproduction*, dey344, <https://doi.org/10.1093/humrep/dey344>, 2018
8. T.C. Peak, et al. **Exosomes secreted by placental stem cells selectively inhibit growth of aggressive prostate cancer cells.** *Biochemical and Biophysical Research Communications*, Volume 499, Issue 4, 23 May 2018, Pages 1004-1010.
9. A. Jarmalavičiūtė, et al. **Exosomes from dental pulp stem cells rescue human dopaminergic neurons from 6-hydroxy-dopamine-induced apoptosis.** *Cytotherapy*, 2015
10. U Pivoraitė, et. al. **Exosomes from Human Dental Pulp Stem Cells Suppress Carrageenan-Induced Acute Inflammation in Mice.** *Inflammation*, April 2015
11. K. Narbutė, et al. **Intranasal Administration of Extracellular Vesicles Derived from Human Teeth Stem Cells Improve Motor Symptoms and Normalize Tyrosine Hydroxylase Expression in the Substantia Nigra and Striatum of the 6-Hydroxydopamine-Treated Rats.** *Stem Cells Translational Medicine*, pp. 1-10, 2019

12. U. Jonavičė, et al. **Extracellular vesicles can act as a potent immunomodulators of human microglial cells.** *Journal of Tissue Engineering and Regenerative Medicine*, 2019
13. S. Bobis-Wozowicz, et al. **Diverse impact of xeno-free conditions on biological and regenerative properties of hUC-MSCs and their extracellular vesicles.** *Journal of Molecular Medicine*, 2016
14. M. Pokrywczyńska, et al. **Transdifferentiation of Bone Marrow Mesenchymal Stem Cells into the Islet-Like Cells: the Role of Extracellular Matrix Proteins.** *Archivum Immunologiae et Therapiae Experimentalis*, May 2015

Publications

1. D. Murata, et al. **Osteochondral regeneration of the femoral medial condyle by using a scaffold-free 3D construct of synovial membrane-derived mesenchymal stem cells in horses.** *BMC Vet Res*, 2022. <https://doi.org/10.1186/s12917-021-03126-y>
2. R. Vaka, et al. **Direct comparison of different therapeutic cell types susceptibility to inflammatory cytokines associated with COVID-19 acute lung injury.** *Stem Cell Res Ther*, 2022 <https://doi.org/10.1186/s13287-021-02699-7>
3. S. Landau, et al. **Human-engineered auricular reconstruction (hEAR) by 3D-printed molding with human-derived auricular and costal chondrocytes and adipose-derived mesenchymal stem cells.** *Biofabrication*, 2021. <https://iopscience.iop.org/article/10.1088/1758-5090/ac3b91>
4. F. K. Touani, et al. **Pharmacological Preconditioning Improves the Viability and Proangiogenic Paracrine Function of Hydrogel-Encapsulated Mesenchymal Stromal Cells.** *Stem Cells International* 2021 <https://doi.org/10.1155/2021/6663467>
5. P. Vigneault, et al. **Electrophysiological engineering of heart-derived cells with calcium-dependent potassium channels improves cell therapy efficacy for cardioprotection.** *Nat Commun*, 2021. <https://doi.org/10.1038/s41467-021-25180-8>
6. F. Mahyudin, et al. **The Escalation of Osteosarcoma Stem Cells Apoptosis After the Co-Cultivation of Peripheral Blood Mononuclear Cells Sensitized with Mesenchymal Stem Cells Secretome and Colony Stimulating Factor-2 in vitro.** *J Blood Med*. 2021. <https://doi.org/10.2147/JBM.S305566>
7. A. Tait, et al. **GMP compliant isolation of mucosal epithelial cells and fibroblasts from biopsy samples for clinical tissue engineering.** *Sci Rep* 11, 12392 (2021). <https://doi.org/10.1038/s41598-021-91939-0>
8. I. Nikolits, **Towards Physiologic Culture Approaches to Improve Standard Cultivation of Mesenchymal Stem Cells.** *Cells*, 2021,10, 886. <https://doi.org/10.3390/cells10040886>
9. A. Ścieżyńska, et al. **Influence of Hypothermic Storage Fluids on Mesenchymal Stem Cell Stability: A Comprehensive Review and Personal Experience.** *Cells* 2021, <https://doi.org/10.3390/cells10051043>
10. M.G. Svahn, **ALLOGENEIC COMPOSITION.** US Patent App. 16/969,558, 2021
11. S. Bhat, et al. **Expansion and characterization of bone marrow derived human mesenchymal stromal cells in serum-free conditions.** *Sci Rep* 11, 3403 (2021). <https://doi.org/10.1038/s41598-021-83088-1>
12. N. Aydoğdu, et al. **Isolation, Culture, Cryopreservation, and Preparation of Umbilical Cord-Derived Mesenchymal Stem Cells as a Final Cellular Product Under Good Manufacturing Practices-Compliant Conditions.** *Methods in Molecular Biology*. (2020) Springer, New York, NY. https://doi.org/10.1007/7651_2020_332
13. N. Aydoğdu, et al. **Isolation, Culture, Cryopreservation, and Preparation of Skin-Derived Fibroblasts as a Final Cellular Product Under Good Manufacturing Practice-Compliant Conditions.** *Methods in Molecular Biology*. (2020) Springer, New York, NY. https://doi.org/10.1007/7651_2020_333
14. J. Jeriha, et al. **mRNA-Based Reprogramming Under Xeno-Free and Feeder-Free Conditions.** *Methods in Molecular Biology*, 22 June 2020. DOI https://doi.org/10.1007/7651_2020_302
15. S. Suresh, et al. **A nanocomposite hydrogel delivery system for mesenchymal stromal cell secretome.** *Stem Cell Res Ther* 11, 205 (2020). <https://doi.org/10.1186/s13287-020-01712-9>
16. V. Alonso-Camino & B. Mirsch, **Development of standard protocol for the cGMP production of human mesenchymal stem/stromal cells from different source tissues.** *Cytotherapy* Volume 22, Issue 5, Supplement, May 2020, Page S565-S566, <https://doi.org/10.1016/j.jcyt.2020.03.099>

16. A. López Fernández, et al. **Successful scale up expansion of Wharton's jelly mesenchymal stromal cells in different commercial xeno-free and serum-free media.** *Cytotherapy* Volume 22, Issue 5, Supplement, May 2020, Page S94, <https://doi.org/10.1016/j.jcyt.2020.03.162>
17. B. Brinkhof, et al. **ALCAM (CD166) as a gene expression marker for human mesenchymal stromal cell characterisation.** *Gene*: X 14 March 2020, 100031, <https://doi.org/10.1016/j.gene.2020.100031>
18. S. Mount, et al. **Physiologic expansion of human heartderived cells enhances therapeutic repair of injured myocardium.** *Stem Cell Research & Therapy* (2019) 10:316
19. S. R. Cohen, et al. **Cellular Optimization of Nanofat: Comparison of Two Nanofat Processing Devices in Terms of Cell Count and Viability.** *Aesthetic Surgery Journal Open Forum*, <https://doi.org/10.1093/asjof/ojz028> Published: 30 September 2019
20. D. Boruczkowski, et al. **Wharton's Jelly Mesenchymal Stem Cell Administration Improves Quality of Life and Self-Sufficiency in Children with Cerebral Palsy: Results from a Retrospective Study.** *Hindawi Stem Cells International* Volume 2019, Article ID 7402151, 13 pages, <https://doi.org/10.1155/2019/7402151>
21. G.Sagaradze, et al. **Conditioned Medium from Human Mesenchymal Stromal Cells: Towards the Clinical Translation.** *Int.J.Mol.Sci.* 2019, 20, 1656; doi:10.3390/ijms20071656
22. M. Valitsky, et al. **Cerebrospinal Fluid (CSF) Exchange with Artificial CSF Enriched with Mesenchymal Stem Cell Secretions Ameliorates Experimental Autoimmune Encephalomyelitis.** *Int.J.Mol. Sci.*, 2019, 20(7),1793;<https://doi.org/10.3390/ijms20071793>
23. Y. Ben, et al. **STABILIZED AMORPHOUS CALCIUM CARBONATE FOR TREATMENT OF NEUROLOGICAL, MUSCULAR AND INFERTILITY DISEASES OR CONDITIONS.** *US Patent App.* 16/069,762, 2019
24. J. Favaloro, et al. **Evaluation of human platelet lysate (HPL) as a substitute for foetal bovine serum (FBS) and recombinant proteins for the growth and maintenance of bone marrow derived mesenchymal stromal cells (BM-MSC).** *Cytotherapy*, Volume 21, Issue 5, Supplement, May 2019, Pages S84-S85
25. G. Chew, et al. **Tide motion bioreactors for large-scale cultivation and expansion of human mesenchymal stem cells.** *Cytotherapy*, Volume 21, Issue 5, Supplement, May 2019, Page S85
26. V. Alonso-Camino and B. Mirsch, **Rapid expansion of Mesenchymal Stem/Stromal Cells using optimized media supplemented with human platelet lysate PLTMax® or PLTGold®, suitable for cGMP expansion at large scale.** *Cytotherapy*, Volume 21, Issue 5, Supplement, May 2019, Page S85
27. S. Pang, et al. **Dissecting the molecular pathways of apoptosis in mesenchymal stromal cell therapy.** *Cytotherapy*, Volume 21, Issue 5, Supplement, May 2019, Page S85
28. M. Valitsky, et al. **Cerebrospinal Fluid (CSF) Exchange with Artificial CSF Enriched with Mesenchymal Stem Cell Secretions Ameliorates Experimental Autoimmune Encephalomyelitis.** *Int. J. Mol. Sci.* 2019, 20(7), 1793; <https://doi.org/10.3390/ijms20071793>
29. A. Yamasaki, et al. **Osteochondral regeneration using constructs of mesenchymal stem cells made by bio three-dimensional printing in mini-pigs.** *Journal of Orthopaedic Research*, 2018
30. N.B. Vu, et al. **Off-the-Shelf Mesenchymal Stem Cell Technology.** *Stem Cell Drugs - A New Generation of Biopharmaceuticals.* (2018) https://doi.org/10.1007/978-3-319-99328-7_7
31. J.K. Ledwon, et al. **Osteogenic Differentiation Of Msc As A Model Study Of The Postnatal Progressive Crouzon Syndrome.** *Plastic and Reconstructive Surgery - Global Open.* 6(4S):116, APR 2018
33. D.Lisini, et al. **Adipose tissue-derived mesenchymal stromal cells for clinical application: An efficient isolation approach.** *Current Research in Translational Medicine*, <https://doi.org/10.1016/j.retram.2018.06.002>
34. S. Khan, et al. **cGMP-Compatible Large-Scale Production of Mesenchymal Stem Cells (MSCs) In Xeno- and Serum-Free Media for Allogeneic Cell Therapies.** *Cytotherapy*, Volume 20, Issue 5, Supplement, Page S42, 2018
35. A.C. Volz and P.J. Kluger, **Completely serum-free and chemically defined adipocyte development and maintenance.** *Cytotherapy*, April 2018 Volume 20, Issue 4, Pages 576-588
36. C. Ceccaliti, et al. **Optimization of Injectable Thermosensitive Scaffolds with Enhanced Mechanical Properties for Cell Therapy.** *Macromolecular Bioscience*, 2017
37. D. Boruczkowski, et al. **Third-party Wharton's jelly mesenchymal stem cells for treatment of steroid-resistant acute and chronic graft-versus-host disease: a report of 10 cases.** *Turkish Journal of Biology*, 40: 493-500, 2016

Germany

Sartorius Stedim Biotech
GmbH
August-Spindler-Strasse 11
37079 Goettingen
Phone +49 551 308 0

USA

Sartorius Stedim North
America Inc.
565 Johnson Avenue
Bohemia, NY 11716
Toll-Free +1 800 368 7178