

denovoMATRIX GmbH - 22.08.19 denovoMATRIX introduces ready-to-use, chemically defined coated cell cultureware for serum-free hMSC expansion

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Due to their high accessibility and extensive beneficial properties, human Mesenchymal Stem Cells (hMSC) offer exciting promises in a plethora of applications in regenerative medicine, particularly in cell-based therapies. The major challenge of hMSC-based therapy is the large-scale expansion of cells in order to achieve the cell numbers necessary for therapeutic treatment. Currently, bovine-derived fetal calf serum and human plasma-derived fibronectin are commonly used in hMSC culture. These biological extracts frequently reduce experimental reproducibility, and represent a liability for manufacturers of hMSC. To increase lot-to-lot consistency and eliminate the risk of transmission of xenogenic infectious agents, defined cell culture conditions including media and extracellular matrix mimetic coatings are essential.



denovoMATRIX has now introduced a ready-to-use coating composed of chemically defined components. The new product - termed myMATRIX MSC - promotes adhesion, proliferation and high viability of hMSC. According to the manufacturer, this novel surface supports long-term expansion of hMSCs over 10 passages and more than 25 population doublings. Furthermore, myMATRIX MSC enables expansion of hMSC in both serum-free and xeno-free media conditions.



APPLICATION NOTE No. 347

myMATRIX MSC – Chemically Defined and Extracellular Matrix-mimetic Cultureware for Rapid hMSC Expansion

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Abstract

Human mesenchymal stromal cells (hMSC) have the potential for massive impact in the fields of cell-based therapy, tissue engineering and regenerative medicine because of their ready availability, stem cell properties and immunomodulatory activity. Due to their use for research or clinical applications, hMSC must be expanded in order to reach sufficient numbers of cells without reducing their homing ability, multilineage differentiation potential and immunomodulatory properties.

To create optimal growth conditions for hMSC, in vitro specific aspects of the in vivo microenvironment need to be mimicked. The novel chemically defined, animal and human component-free coating of myMATRIX hMSC combines biologically relevant synthetic peptides with surface polysaccharides to facilitate cell adhesion and promote cell expansion. This ready-to-use consumable is optimized for serum-free culture of hMSC. Some morphological hMSC cultured on myMATRIX hMSC show enhanced proliferation while maintaining their characteristic cell morphology.

In addition, myMATRIX hMSC supports the long-term culture of adipose-derived and umbilical cord-derived hMSC. This ready-to-use surface shows preservation time and allows hMSC show enhanced proliferation while ensuring lot-to-lot consistency and reliable performance.

high viability, typical surface marker expression profile and the ability to differentiate in vitro into the three mesoderm lineages.



Vision for the future?

Enabling animal-component free processes for large-scale manufacturing of hMSC.

The field of cell-based therapies just took a step

closer.

Read the application note about myMATRIX hMSC, including detailed expansion analysis of hMSC [here](#).

About denovoMATRIX

denovoMATRIX develops and manufactures biomimetic coatings for the cultivation of human stem cells. Our focus is on enabling culture conditions for stem cells closer to the natural conditions found in the body. Our products offer a biologically relevant solution, which is both chemically defined, and modular for adapting to specific applications. Our vision is to enable human biology in vitro, beginning with Life Science research and onwards to cell therapies of the future.

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