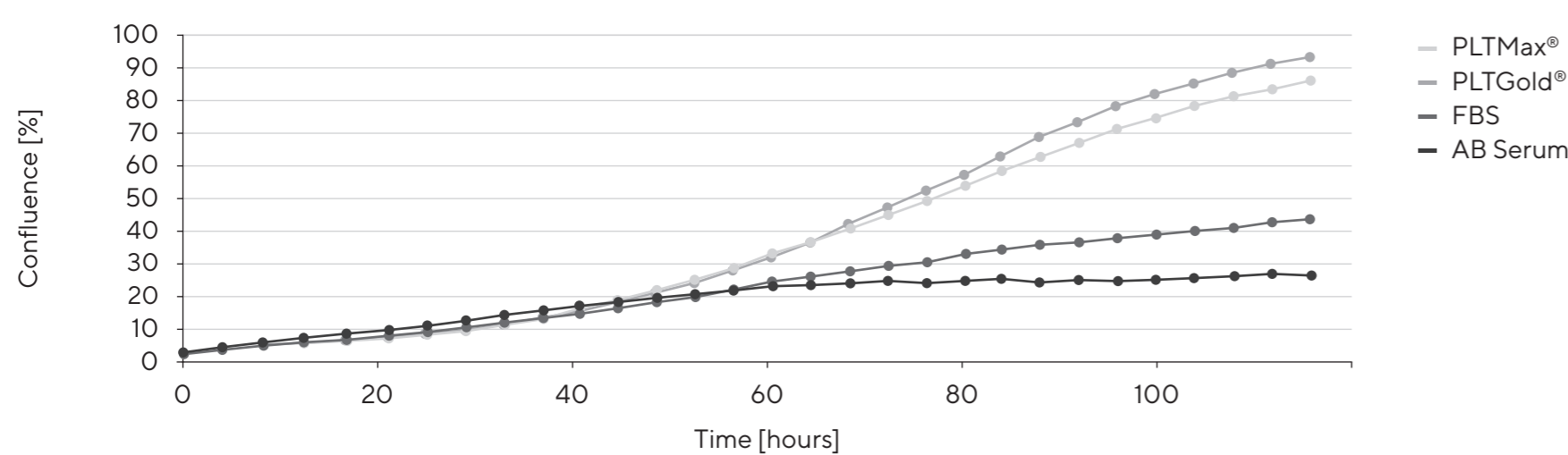


## Achieve More.

More Healthy MSCs Are Generated in Less Time When Cultured in the Advanced NutriStem<sup>®</sup> MSC Medium Supplemented With 5% PLTGold<sup>®</sup> Human Platelet Lysate – a Completely Xeno-Free, Clinical-Grade Medium Suitable for MSC Scale-up for Therapeutics and Cell Manufacturing.

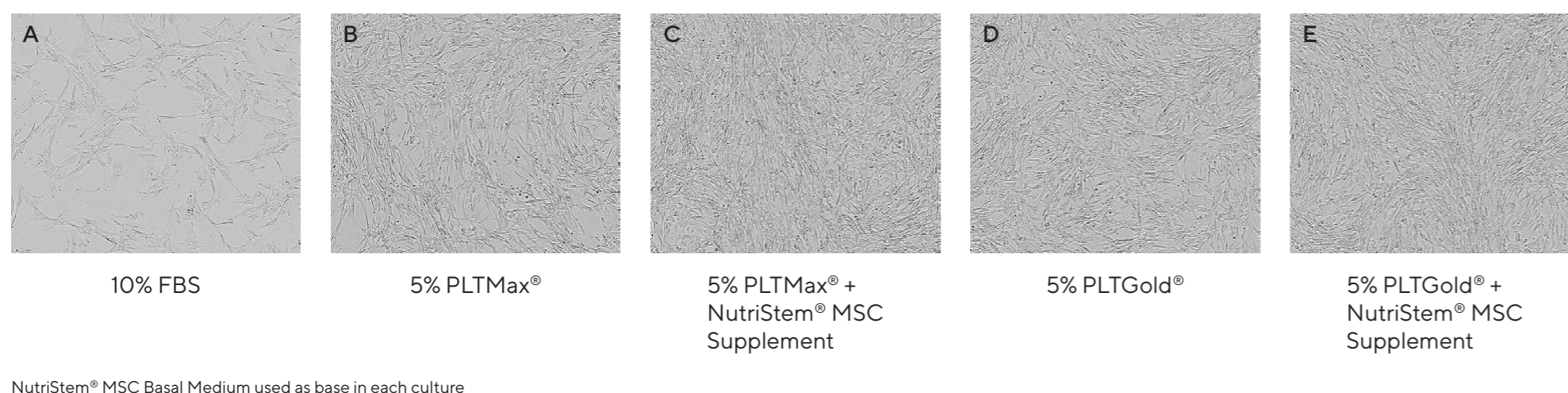
PLTMax<sup>®</sup> and PLTGold<sup>®</sup> Human Platelet Lysates are revolutionary animal serum-free culture supplements with proven growth and cellular kinetic properties, and are routinely used for culture and expansion of both primary cells and stem cells. PLTMax<sup>®</sup> and PLTGold<sup>®</sup> enable excellent MSC growth and proliferation in a variety of media, most notably in combination with the defined and highly optimized NutriStem<sup>®</sup> MSC Medium.

PLTMax<sup>®</sup> is the original GMP-produced human platelet lysate, which has been used in the clinic since 2008, including more than 30 Phase I, II, and III clinical trials worldwide. PLTGold<sup>®</sup> is the next generation of human platelet lysates, demonstrating the same exceptional performance in cell culture and expansion as a completely xeno-free supplement. Through pioneering advancements in platelet processing, PLTGold<sup>®</sup> is a whole, non-fractionated, non-depleted product that does not require the addition of anticoagulants at any stage. PLTGold<sup>®</sup> contains all of the growth factors and proteins needed for maximized cell growth in a truly xeno-free solution that continues to out-perform other serum supplements.

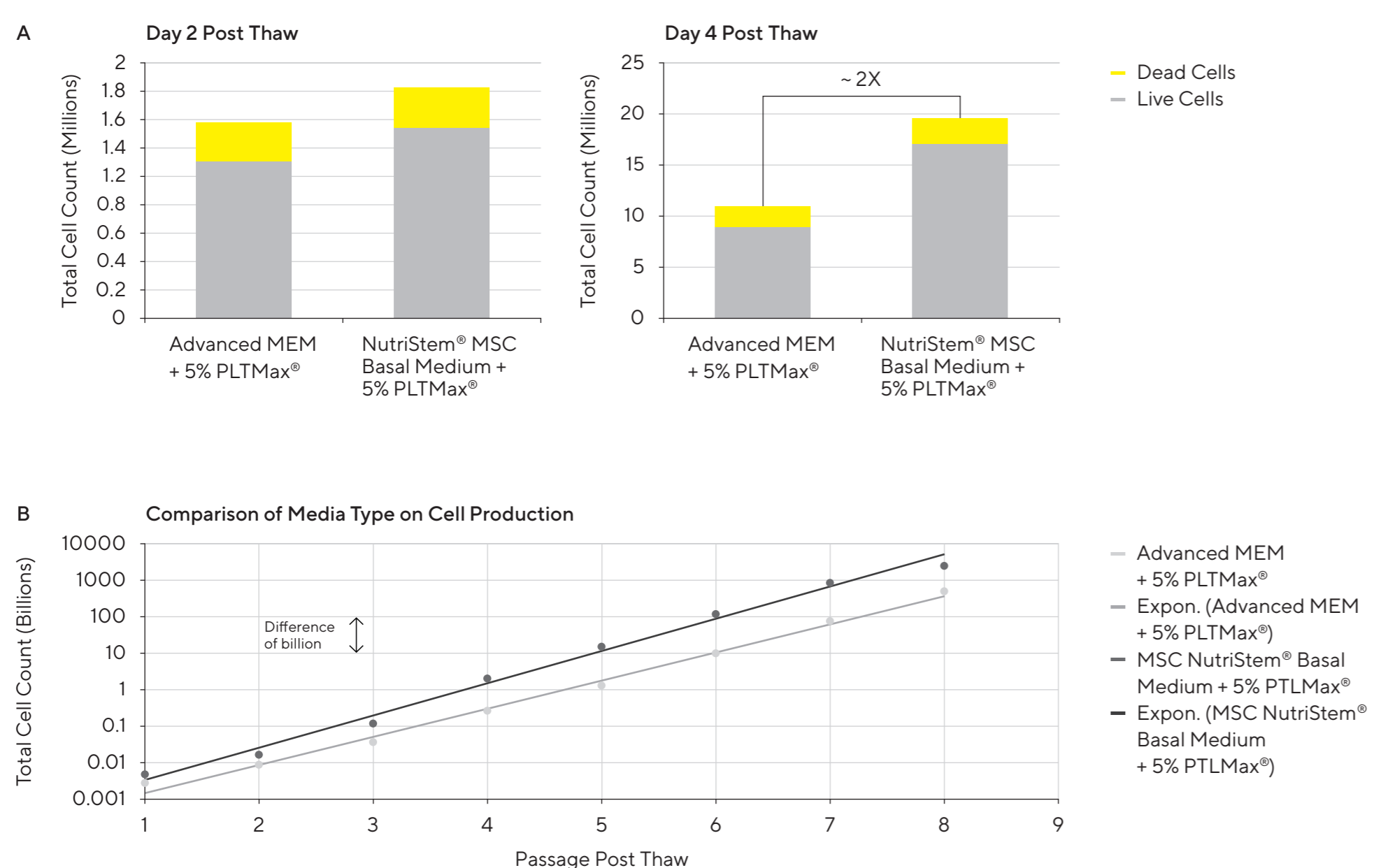


**Figure 1. Cell kinetics of AD-MSCs cultured in NutriStem<sup>®</sup> MSC Basal Medium supplemented with PLTGold<sup>®</sup> or PLTMax<sup>®</sup> outperform cultures supplemented with sera.** Cell proliferation was assessed based on % confluence of human adipose-derived (AD-) MSCs cultured in NutriStem<sup>®</sup> MSC Basal Medium supplemented with either 10% human AB serum, 10% FBS, 5% PLTMax<sup>®</sup> Human Platelet Lysate, or 5% PLTGold<sup>®</sup> Human Platelet Lysate. Cells grew significantly faster when cultured in 5% PLTGold<sup>®</sup> or PLTMax<sup>®</sup> Human Platelet Lysates as compared to either animal or human sera supplemented at 10%.

## NutriStem<sup>®</sup> MSC Medium With PLTMax<sup>®</sup> or PLTGold<sup>®</sup> Human Platelet Lysate Demonstrates Superior Expansion of MSCs.

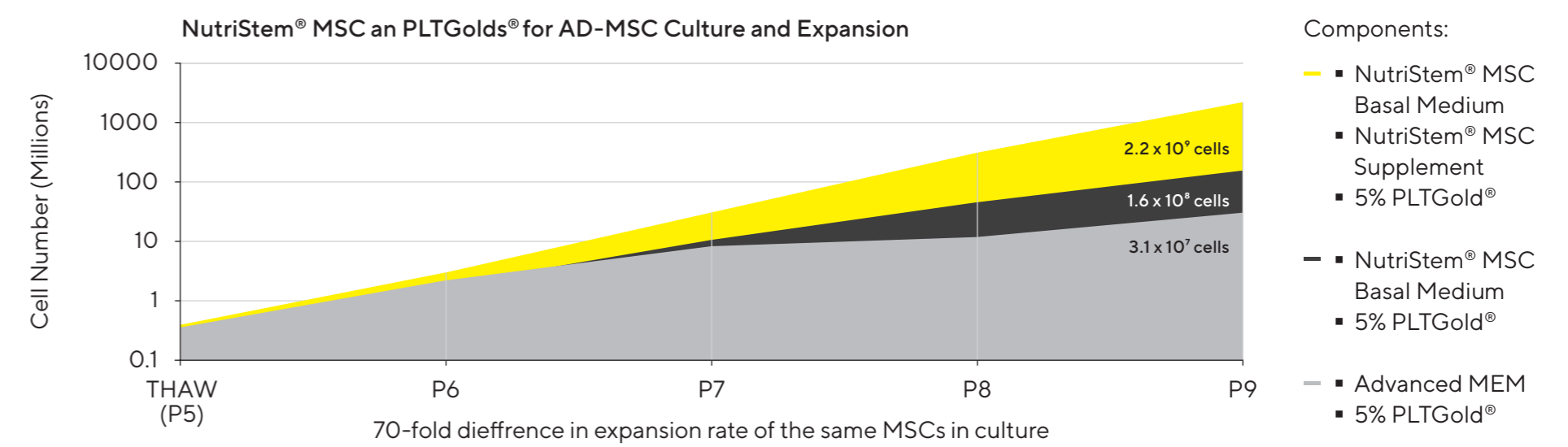


**Figure 2. Improved morphology and cell growth is observed when AD-MSCs are cultured in variations of NutriStem<sup>®</sup> MSC Medium + 5% PLTMax<sup>®</sup> or 5% PLTGold<sup>®</sup>.** Normal healthy morphology and higher cell numbers are seen when cells are cultured in NutriStem<sup>®</sup> MSC Basal Medium supplemented with 5% PLTMax<sup>®</sup> or 5% PLTGold<sup>®</sup> (C and E) compared to FBS (A). The addition of 0.6% NutriStem<sup>®</sup> MSC Supplement to the medium further enhances cell proliferation while maintaining healthy morphology (B and D).

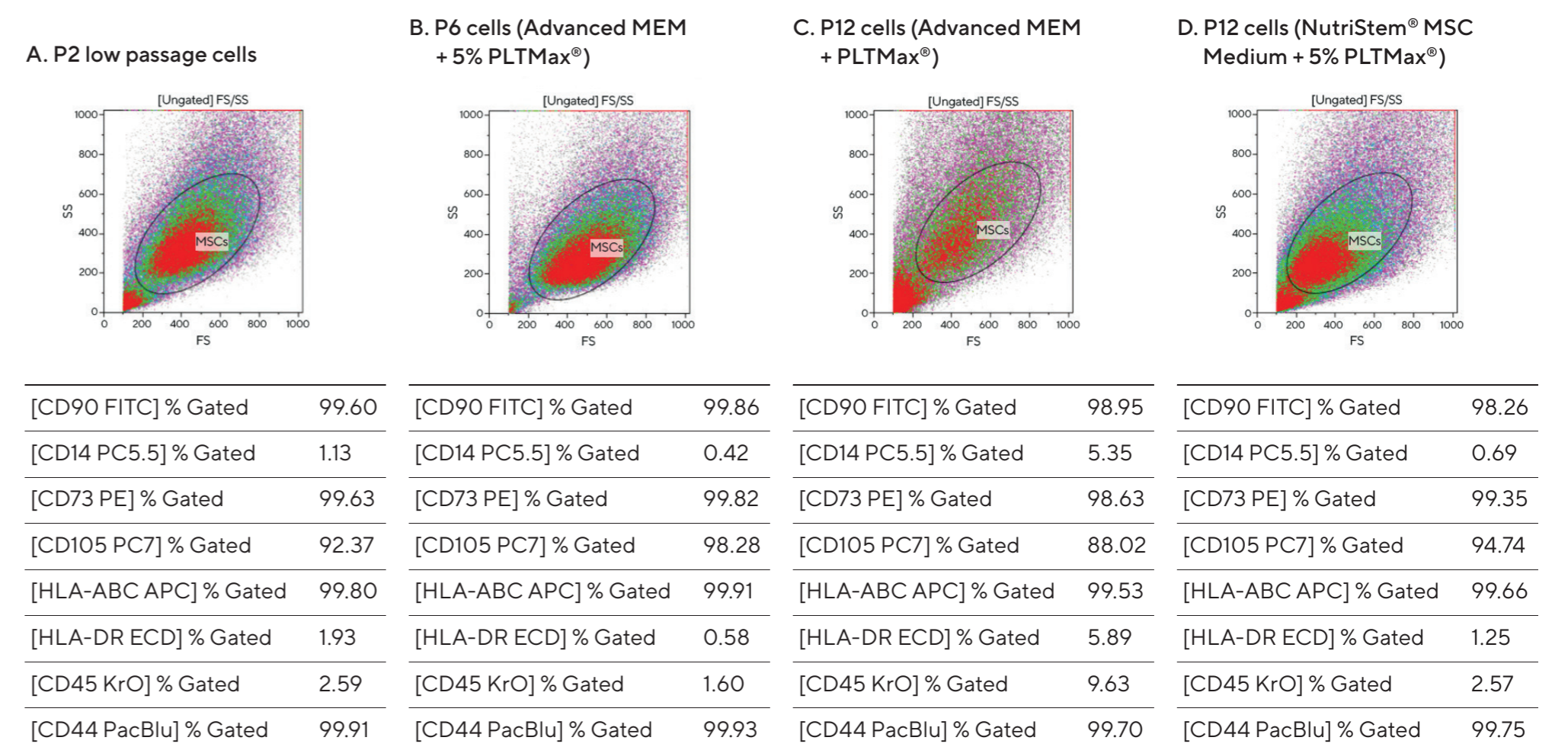


**Figure 3. Thawing and expansion are more efficient in NutriStem<sup>®</sup> MSC Basal Medium + 5% PLTMax<sup>®</sup>.** Cells previously cultured in Advanced MEM + 5% PLTMax<sup>®</sup> were thawed directly into 2 media conditions. A) Compared to continued culture in Advanced MEM + 5% PLTMax<sup>®</sup>, more viable cells are obtained when thawed directly into NutriStem<sup>®</sup> MSC Basal Medium + 5% PLTMax<sup>®</sup>. More than 10 times more cells were obtained by Day 4 post-thaw when cells were grown in NutriStem<sup>®</sup> MSC Basal Medium + 5% PLTMax<sup>®</sup>. B) Upon further culture, cells continue to proliferate at an exponential rate in NutriStem<sup>®</sup> MSC Basal Medium + 5% PLTMax<sup>®</sup>. After only 4 passages post-thaw, the expansion rate between culture conditions differs by approximately 10 billion cells. Cell counts taken at end of each passage.

## NutriStem<sup>®</sup> MSC Supplement Further Enhances Performance and Maintains Healthy MSCs.



**Figure 4. NutriStem<sup>®</sup> MSC Medium + 5% PLTGold<sup>®</sup> allows for exceptional growth and expansion of MSCs.** Cells previously cultured in Advanced MEM + 5% PLTMax<sup>®</sup> were thawed and divided into 3 culture conditions for further expansion. Cells cultured in NutriStem<sup>®</sup> MSC Basal Medium + 5% PLTGold<sup>®</sup> outperformed cells cultured in Advanced MEM + 5% PLTGold<sup>®</sup> within 2 passages post-thaw (dark grey). The addition of 0.6% NutriStem<sup>®</sup> MSC Supplement further enhanced the cells' proliferation and expansion rate, generating a 70-fold or 7,000% increase in cell number from the Advanced MEM cultures after only 4 passages post-thaw (yellow).



**Figure 5. Cells cultured in NutriStem<sup>®</sup> MSC Basal Medium + NutriStem<sup>®</sup> MSC Supplement + 5% PLTMax<sup>®</sup> maintain normal MSC marker expression, similar to low passage MSCs.** A) Representative early passage cells. B) Starting cell population for expansion, cultured to this point in Advanced MEM + 5% PLTMax<sup>®</sup>. C) Cells at P12 after continued expansion in Advanced MEM + 5% PLTMax<sup>®</sup>. D) Cells at P12 after further expansion in NutriStem<sup>®</sup> MSC Basal Medium + 0.6% NutriStem<sup>®</sup> MSC Supplement + 5% PLTMax<sup>®</sup>. Cells maintained in NutriStem<sup>®</sup> MSC Medium + Supplement + PLTMax<sup>®</sup> (D) maintained very high expression of the MSC markers CD90, CD73, CD105, CD44, and HLA-ABC. Notably, these cells also maintained true negative marker expression for CD14, HLA-DR, and CD45, while other cells start to lose this definition when expanded in long-term culture, as seen when the same cells are cultured in Advanced MEM + PLTMax<sup>®</sup> (C).

## NutriStem<sup>®</sup> MSC Medium Supplemented With PLTMax<sup>®</sup> or PLTGold<sup>®</sup> is an Optimal Culture System for Expanding MSCs for Clinical Applications.

- |  |   |   |
|--|---|---|
| <p><b>PLTMax<sup>®</sup> Human Platelet Lysate</b></p> <ul style="list-style-type: none"> <li>Superior alternative to FBS</li> <li>Enhanced genetic stability in MSC cultures**</li> <li>Faster cell growth kinetics</li> <li>Used in over 30 clinical trials worldwide</li> </ul> | <p><b>PLTGold<sup>®</sup> Human Platelet Lysate</b></p> <ul style="list-style-type: none"> <li>Promotes rapid and healthy cell expansion</li> <li>No animal components; xeno-free</li> <li>Non-fractionated, non-depleted</li> <li>No heparin or anticoagulants needed</li> </ul> | <p><b>NutriStem<sup>®</sup> MSC Medium</b></p> <ul style="list-style-type: none"> <li>Serum-free, xeno-free, defined medium</li> <li>Manufactured under cGMP</li> <li>In vitro diagnostic medical device (IVD)</li> <li>Drug master file (DMF) available</li> </ul> |
|--|---|---|

\*\*Reference: Crespo-Diaz, Ruben et al. (2011) Cell Transplantation, (20)6:797-811.

## Ordering Information

Product Name	Grade	Cat. #	Qty.*
PLTMax <sup>®</sup> Human Platelet Lysate	Research	PLTMAX100R	100 mL
PLTMax <sup>®</sup> Human Platelet Lysate	GMP, Clinical	PLTMAX100GMP	100 mL
PLTGold <sup>®</sup> Human Platelet Lysate	Research	PLTGOLD100R	100 mL
PLTGold <sup>®</sup> Human Platelet Lysate	GMP, Clinical	PLTGOLD100GMP	100 mL

NutriStem<sup>®</sup> MSC Medium      GMP, Clinical      05-200-1A-KT      500 mL

\*Additional sizes and/or customization available upon request.

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