

The AlphaSTEM Test™ Service

*Increases Quantity of
Therapeutic Human Mesenchymal Stem Cells
And Reduces Production Time & Cost*

Contact:

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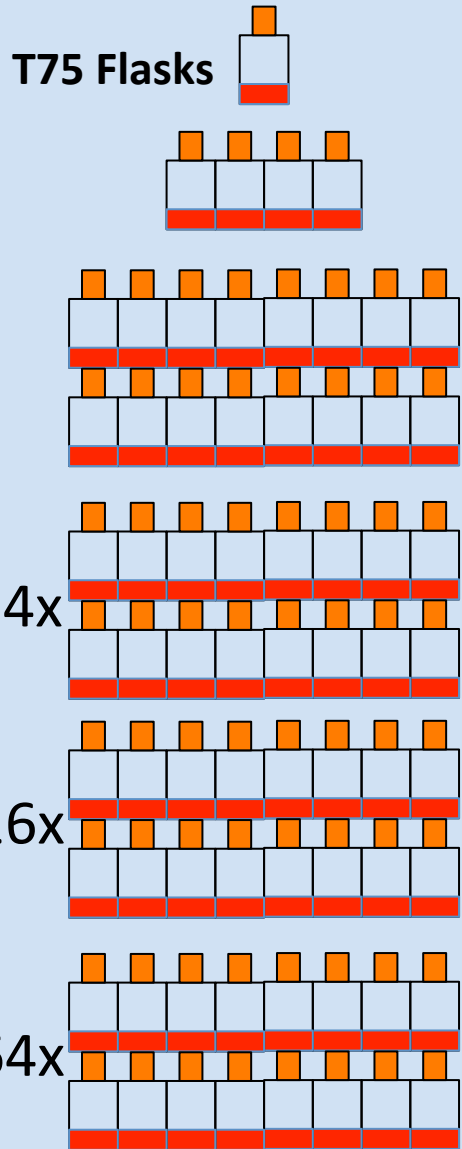
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The Problem

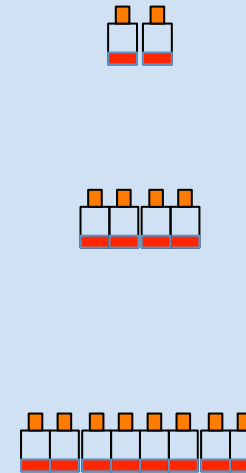


hMSC Expansion Passage

- P1 Long times,
many flasks,
high costs,
but few stem cells
- P2
- P3
- P4
- P5

The Solution

 T25 Flasks



With AlphaSTEM Test™ and Design

2X more stem cells

1/32 the culture media

1/24 the culture area

1/2 the time

Lower costs with more hMSCs

hMSC Production Challenges

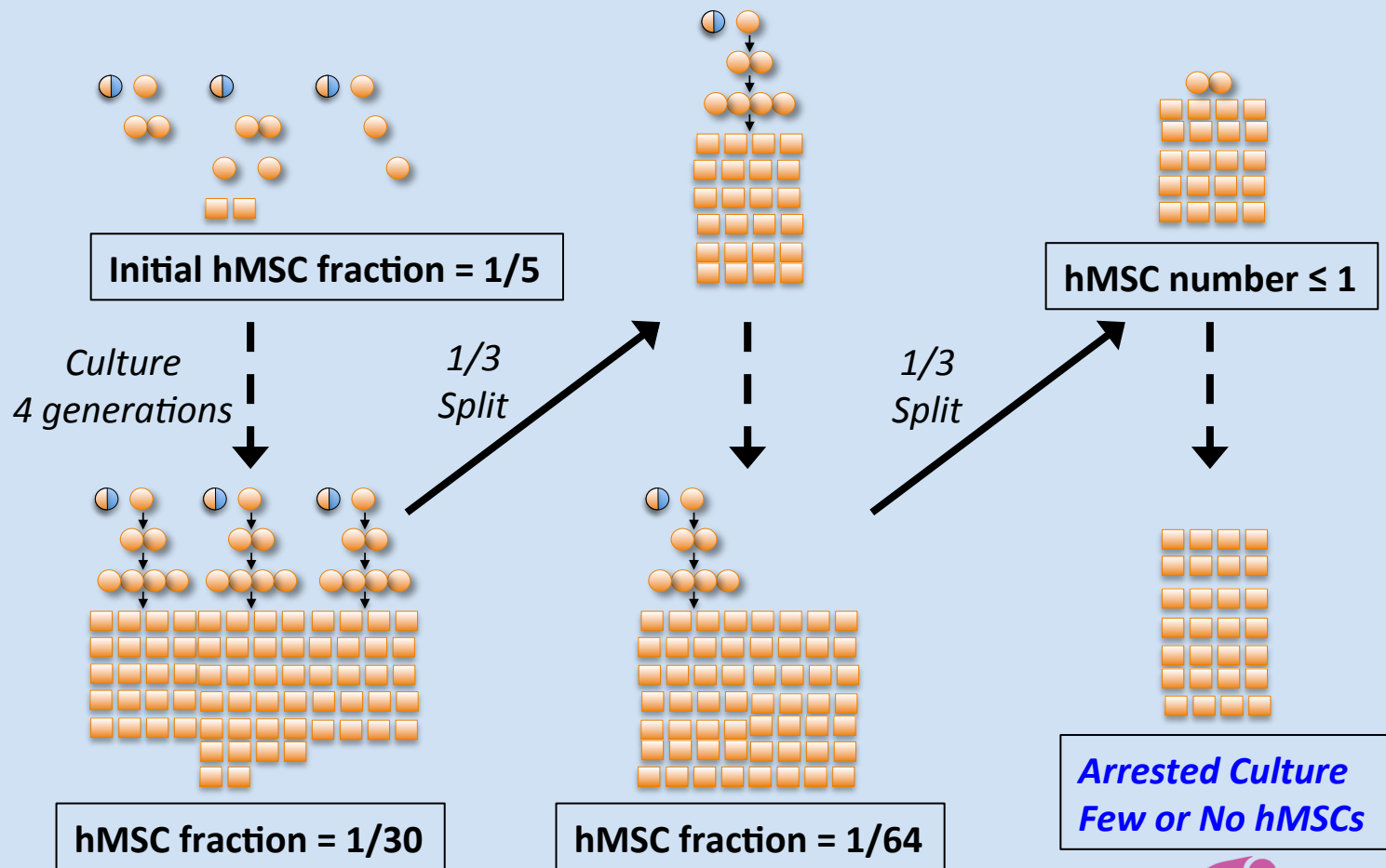
1. <1% of cells in hMSC preparations are stem cells.
2. hMSC activities decline with serial expansion culture.

Currently, the production process is “blind”

Time and money are lost:

- ***Inefficient timing of expansion steps***
- ***Cultures stop growing earlier than desired***
- ***Poor performance of cultures sold to customers***

Why? Asymmetric Division With Serial Culture Dilutes Low Fraction hMSCs



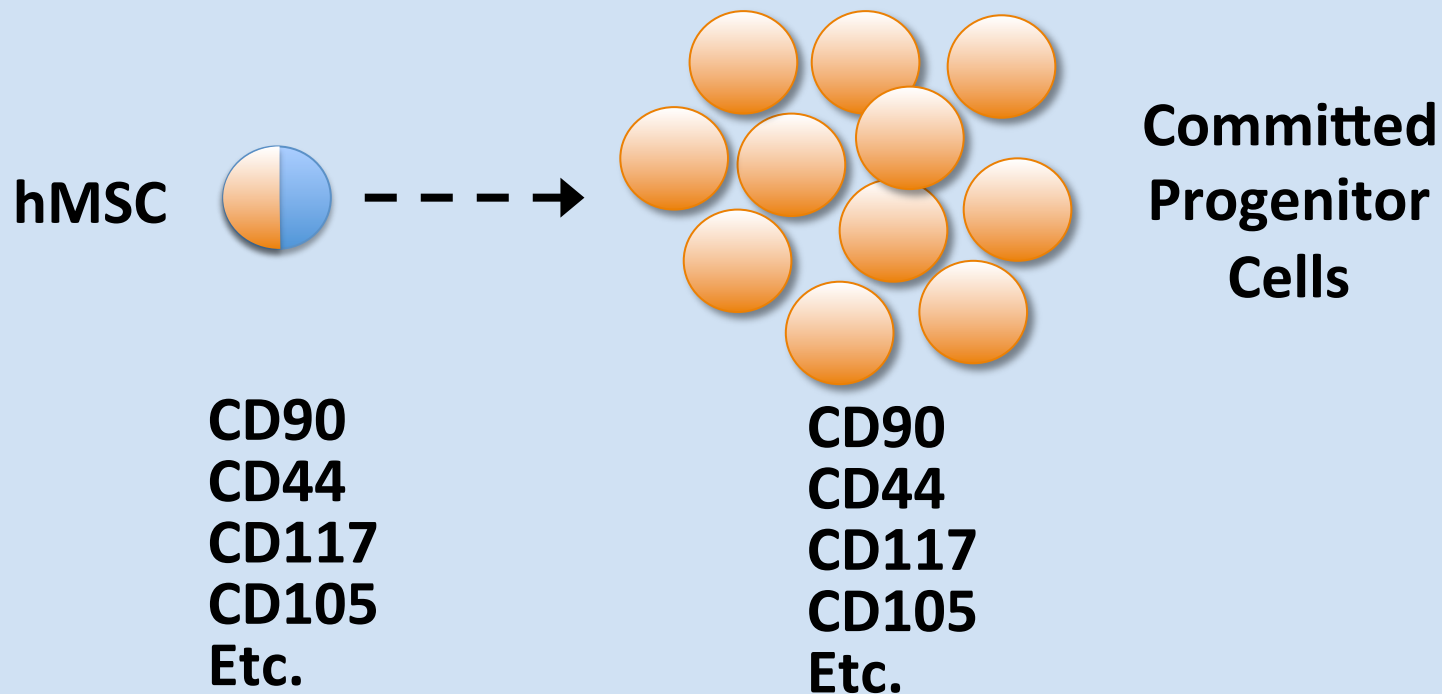
hMSC Production Needs

1. Need: A simple to use method to count hMSCs specifically and monitor changes in quality and number during production.
2. Need: A method to determine the quality and dose of the final hMSC-containing product.

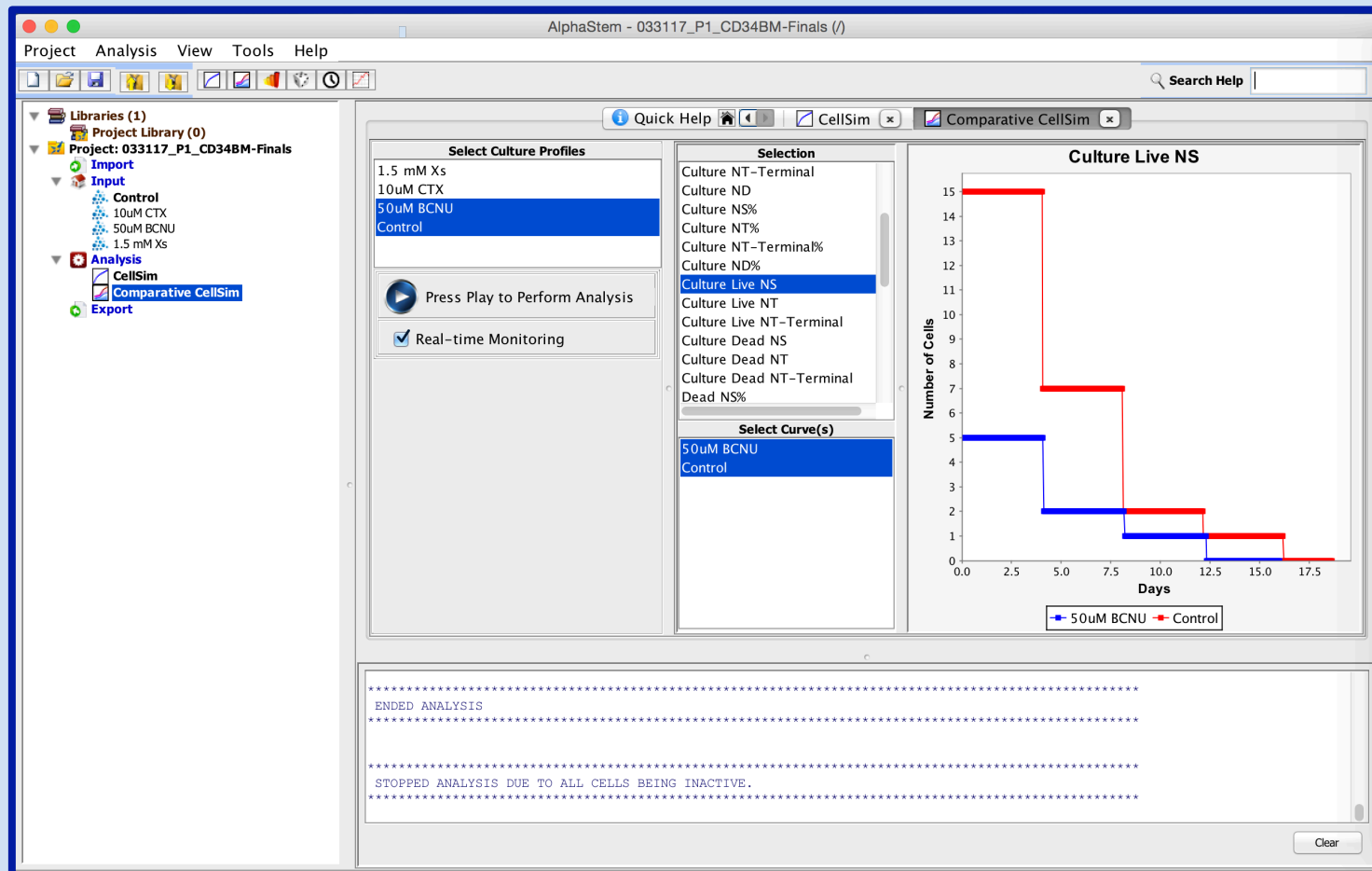
The ability to see and follow hMSCs during production will lead to process optimizations that save time and money while increasing hMSC production.

Current Biomarkers Lack the Specificity Required to “See” hMSCs

All are expressed by committed progenitor cells, too.



The AlphaSTEM Test™ Software Can “See” hMSCs Specifically for Counting



The AlphaSTEM Test™ Service

Cell Count Data From
Each Passage

AlphaSTEM Test™
Computational
Simulation

Production Kinetics
Quality
Dose
More efficient expansion

**Fits into existing workflow.
Asymmetrex does the work.**

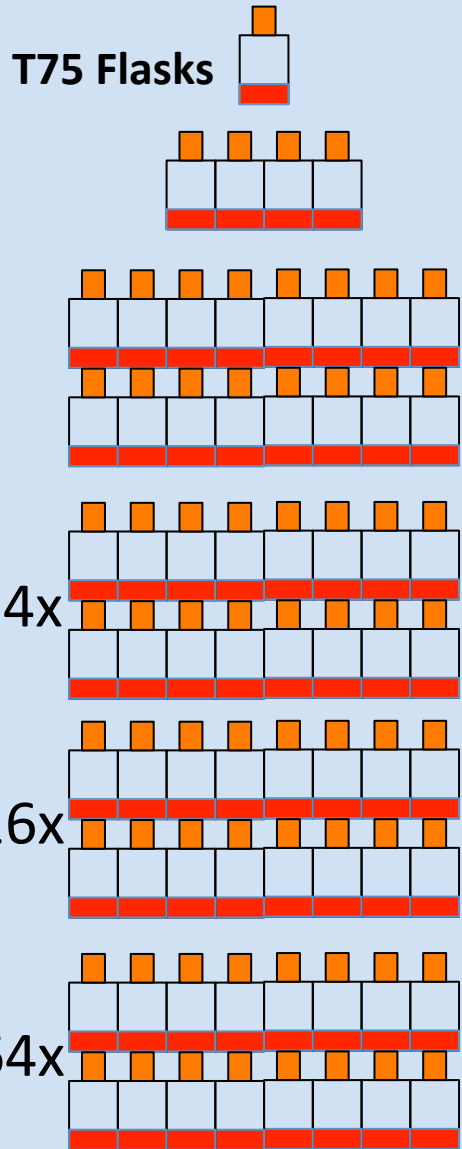
The AlphaSTEM Test™ Increases hMSC Production, Saving Time and Money With Increased Product Quality

1. Monitor hMSC-specific fraction during expansion.
2. Quantify effects of supplements and culture conditions on hMSC number and function.
3. Determine the quality and dose of the final expanded hMSC product.
4. Design more effective production processes.

The AlphaSTEM Test™ Service:

1. Reduces hMSC Production Costs
2. Reduces hMSC Production Time
3. Increases Number hMSCs Produced
4. Provides a Higher Pricing Basis

The Problem



hMSC Expansion Passages

P1 Long times,
many flasks,
high costs,
but few stem cells

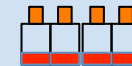
P3

P4

P5

The Solution

T25 Flasks



With AlphaSTEM Test™:
Shorter times,
fewer flasks,
lower costs,
and more stem cells