The AlphaSTEM Test™ Service

A New Technology from Asymmetrex for Evaluating the Effects of Drug Candidates on Natural Adult Tissue Stem Cells Including Efficacy and Safety

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TECHNOLOGIES FOR STEM CELL MEDICINE

First, a few tissue stem cell concepts:

Importance for health, disease, drug effects

- Rare cells in the tissues of children and adults that are essential for tissue cell renewal and repair.
- Positive-acting drugs could increase healing.
- Negative-acting drugs could cause intolerable chronic organ failure.

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A Stem Cell Drug Evaluation Need

Convenient and routine identification and evaluation of tissue stem cell-active drugs is a long-standing unmet need in the pharmaceutical industry.

Why?

No practical means to *specifically* quantify adult tissue stem cells for drug evaluation assays.

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Previously Available Technologies

Preclinical assays

- Colony forming assays are unreliable and not specific
- SCID mouse assays are long, costly, non-quantitative
- Animal dosing is long, costly, and sometimes insensitive for chronic organ failure caused by stem cell toxicity

Clinical trials

- Toxicity often not noted until in phase II, III, or later
- Very expensive
- Patients at risk for injury by unknown stem cell-toxic candidates

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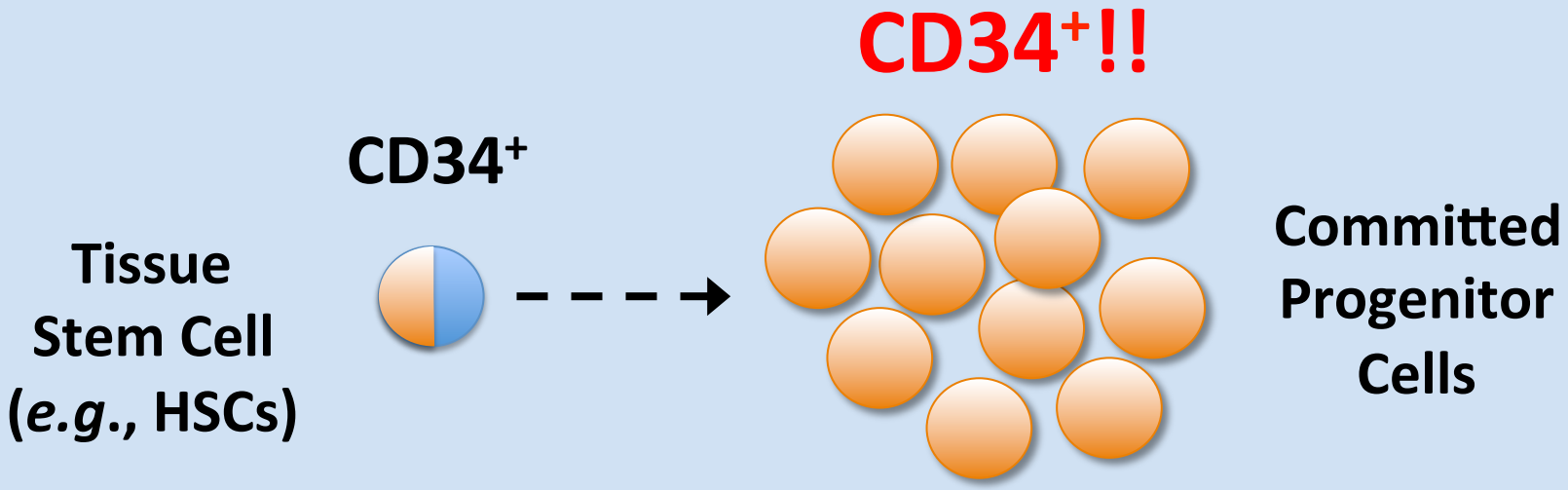
Why hasn't it been possible to specifically count adult tissue stem cells for drug discovery?

Poor Specificity Biomarkers

Also expressed on progenitor cells.



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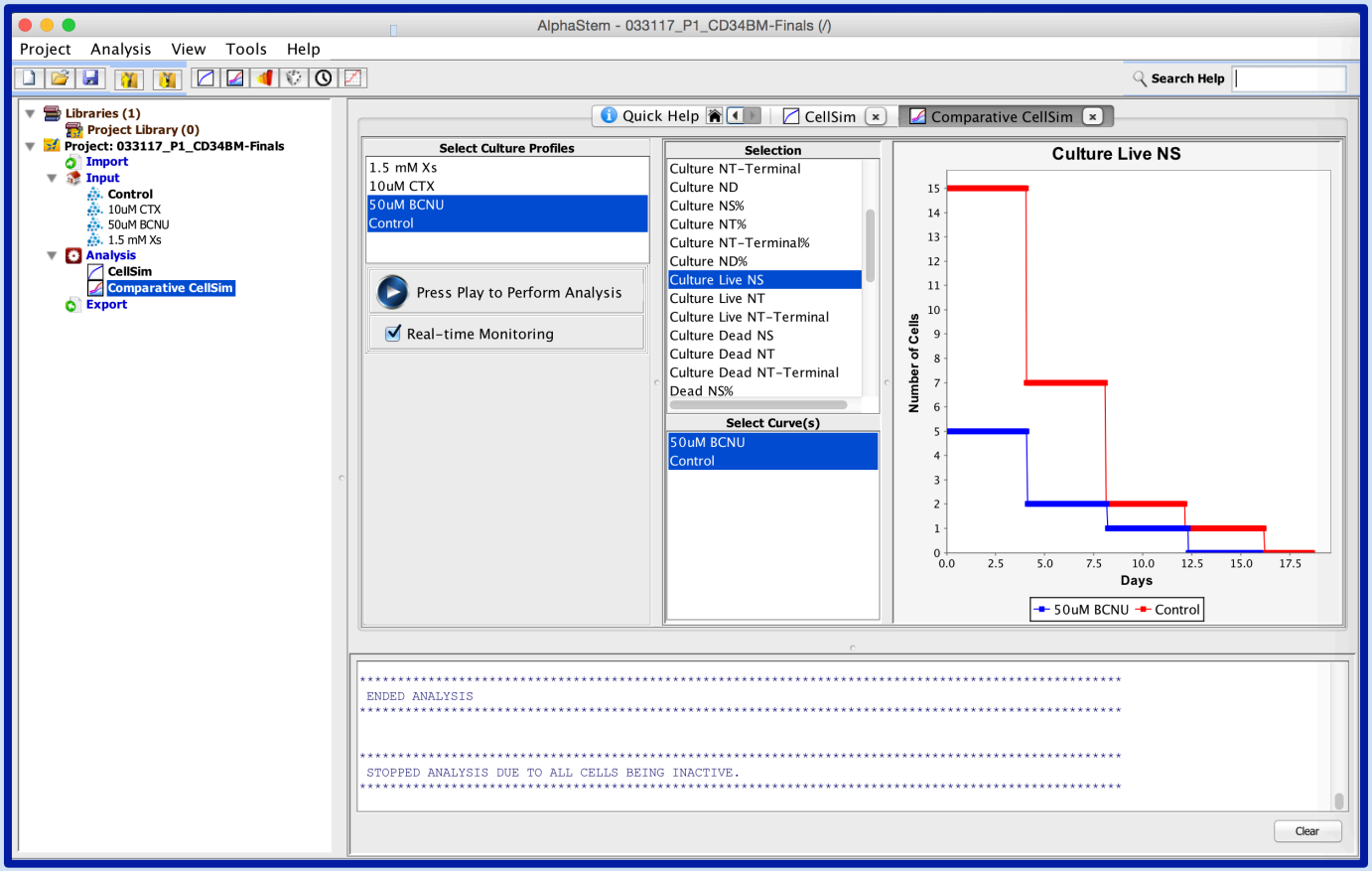
Using Computational Simulation The AlphaSTEM Test™ Software Can Count Tissue Stem Cells Specifically



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The AlphaSTEM Test™

- **Validated for 4 Human Tissue Stem Cell Types (Hematopoietic, Liver, Lung, Mesenchymal)**
- **Validated for detecting SC-activating agents**
- **Validated for detecting SC-toxic agents**

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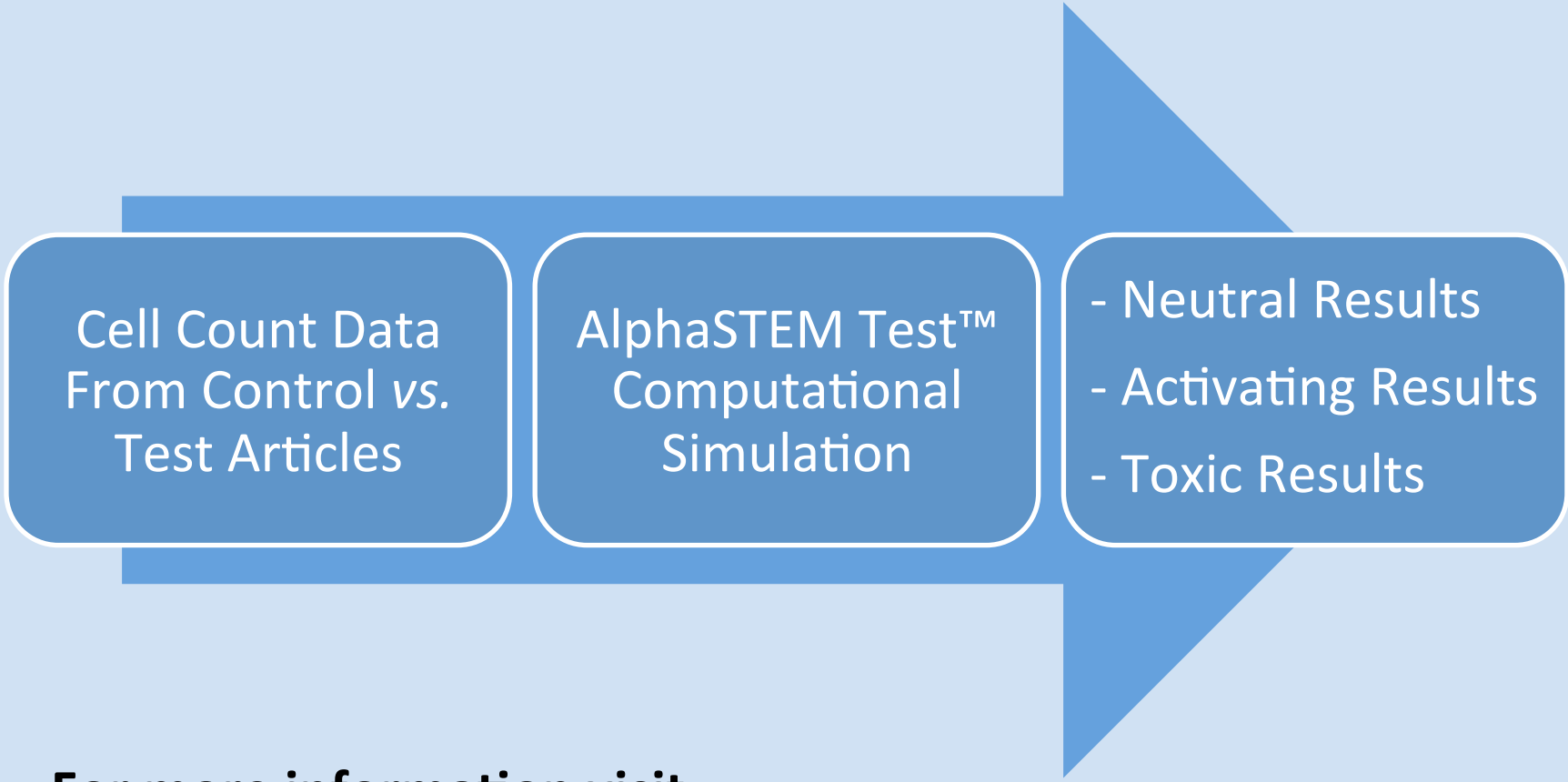
The AlphaSTEM Test™ Service



For more information visit:
http://asymmetrex.com/our-services/alphastem-test/

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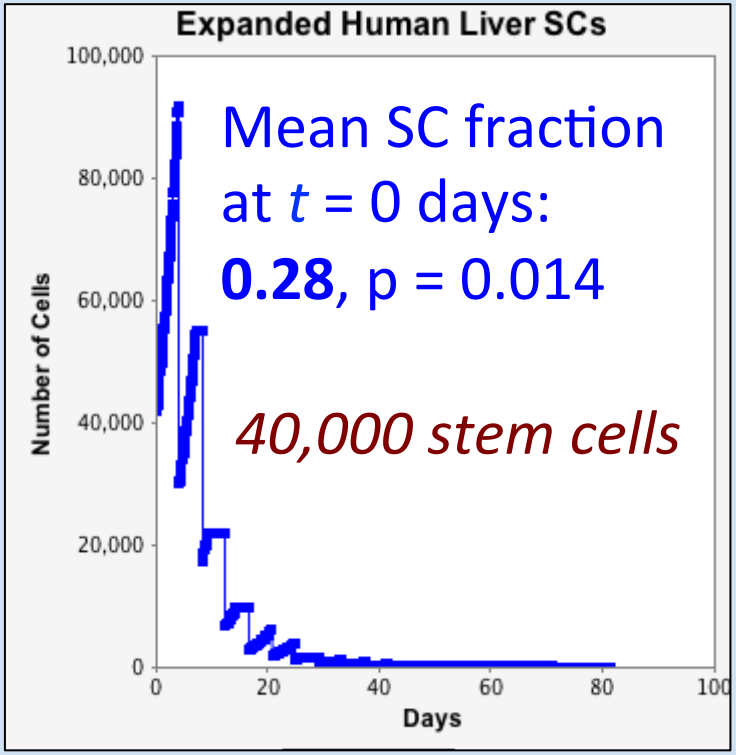
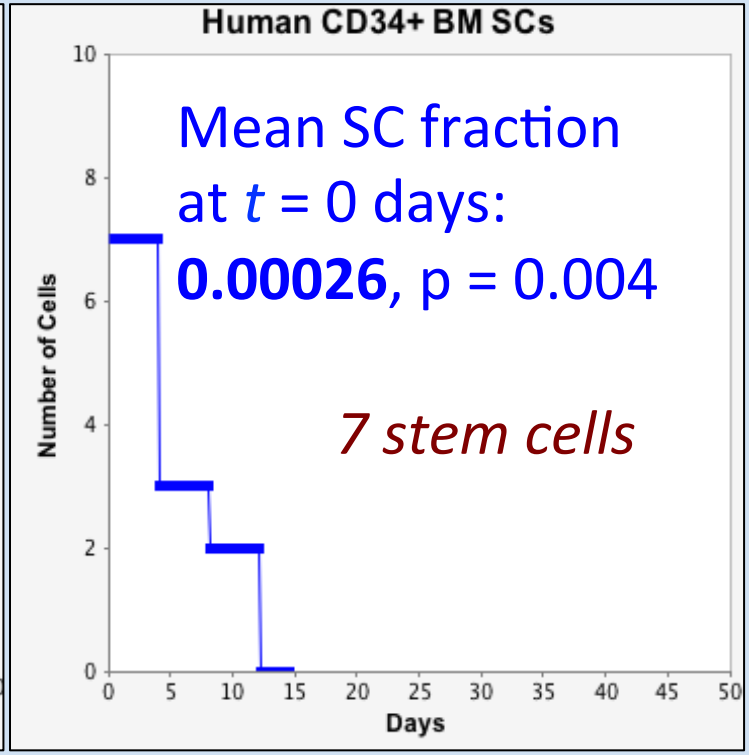
Detecting Differences in the Cell Kinetics of Different Types of Adult Tissue Stem Cells

(AlphaSTEM Test™ Outputs)





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Quantifying Tissue Stem Cell-Active Drugs

Xanthosine, activating (+); BCNU, toxic (-)

Parameter	Liver	CD34+	CD34+ Xs (+)	CD34+ BCNU (-)
Stem Cells				
Initial Fraction	0.28 (0.014)	2.6e-4 (0.004)	3.5e-3 (0.001)	1.3e-4 (0.001)
Symmetric Rate	0.24 (0.048)	1.3e-3 (NS)	3.2e-3 (0.037)	0.0 (NS)
Sym CC Time	30h (2e-4)	7.8h (<1e-4)	9.4h (NS)	8.2h (NS)
Asym CC Time	16h (1e-4)	7.0h (2e-4)	6.6h (NS)	7.6h (NS)
Non-stem cycling cells				
CC Time	18h (3e-4)	6.8h (<1e-4)	8.2h (NS)	6.4h (NS)

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Detecting Tissue Stem Cell Toxicity

Drug	Liver Stem Cells	Bone Marrow Stem Cells
Cytoxan	(indeterminate)[1]	Toxic
BCNU	Toxic	Toxic
Idarubicin	Toxic	Toxic

[1]may require evaluation at a higher concentration

Tissue stem cell-toxic drug candidates cause chronic organ failure.

In the U.S., an estimated $4-5 billion is loss yearly due to failure of such drugs in animal studies and phase II and III clinical trials.

The AlphaSTEM Test™ could save the Pharma industry billions each year by detecting these problem candidates early and at much less cost.

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For a Brief Video Presentation Of the AlphaSTEM Test™

Visit:

https://www.dropbox.com/s/yry16pwul8t6rzv/Asymmetrex.mp4?dl=0

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