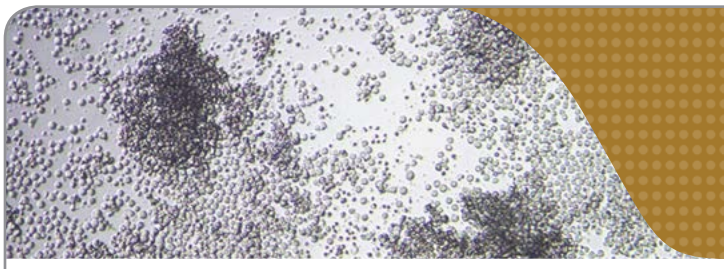

StemSpan™

CD34⁺ Expansion Supplement (10X)

Background

Investigators studying hematopoiesis require standardized culture media and cytokines to promote the proliferation and/or lineage-specific differentiation of hematopoietic stem and progenitor cells (HSPCs) from human bone marrow (BM), cord blood (CB) and other tissues. STEMCELL Technologies has developed a family of expansion media, which includes serum-free and animal component-free formulations (see page 2). StemSpan™ media require addition of cytokines to promote HSPC proliferation and differentiation. The choice of cytokines and supplements is dependent on the objective of the experiment, i.e. on the desired numbers of specific cell types to be generated in vitro.

Product Description

StemSpan™ CD34⁺ Expansion Supplement (10X) (Catalog #02691) contains a combination of recombinant human cytokines (SCF, IL-3, IL-6, Flt3L and TPO) and other additives formulated to selectively support expansion of human hematopoietic progenitor cells that are characterized by their expression of the CD34 antigen (Table 1, Figure 1). It is optimized for use in combination with StemSpan™ SFEM, SFEM II and -ACF media.

Advantages:

- Defined and serum-free
- Promotes > 10-fold expansion of human CB-derived CD34⁺ cells in 7-day liquid cultures
- Optimized for use with StemSpan™ media

Applications:

- Expansion of human HSPCs in culture
- Induction of stem and progenitor cell cycling for studies of signal transduction and metabolism, or to facilitate retroviral gene transfer
- "Pre-amplification" of hematopoietic progenitor cells to increase the yield of mature cells in lineage-specific expansion and subsequent differentiation cultures
- Assessment of effects of candidate therapeutics on HSPCs during drug development

Data

Table 1. Expansion of CD34⁺ Human Cord Blood Cells Cultured in StemSpan™ SFEM Containing CD34⁺ Expansion Supplement

CB SAMPLE	% CD34⁺ CELLS	TNC FOLD EXPANSION	CD34⁺ CELLS FOLD EXPANSION	CFU PRODUCED PER INPUT CD34⁺ CELL
1	40	28	11	46
2	57	33	12	56
3	35	31	18	58
4	49	41	20	35
5	27	40	11	ND
6	38	35	13	ND
Mean 95% CL*	41 32-50	35 29-40	14 10-18	49 23-66

Shown are the percentages of CD34⁺ cells, fold-expansion of total nucleated cells (TNCs) and CD34⁺ cells, and numbers of hematopoietic colonies (colony-forming units (CFUs)) produced per input CB-derived CD34⁺ cell, after 7 days of culture (n=6) with StemSpan™ SFEM containing CD34⁺ expansion supplement (n = 6).
*95% confidence limits (CL); the range within which 95% of the results will typically fall.
ND: No Data

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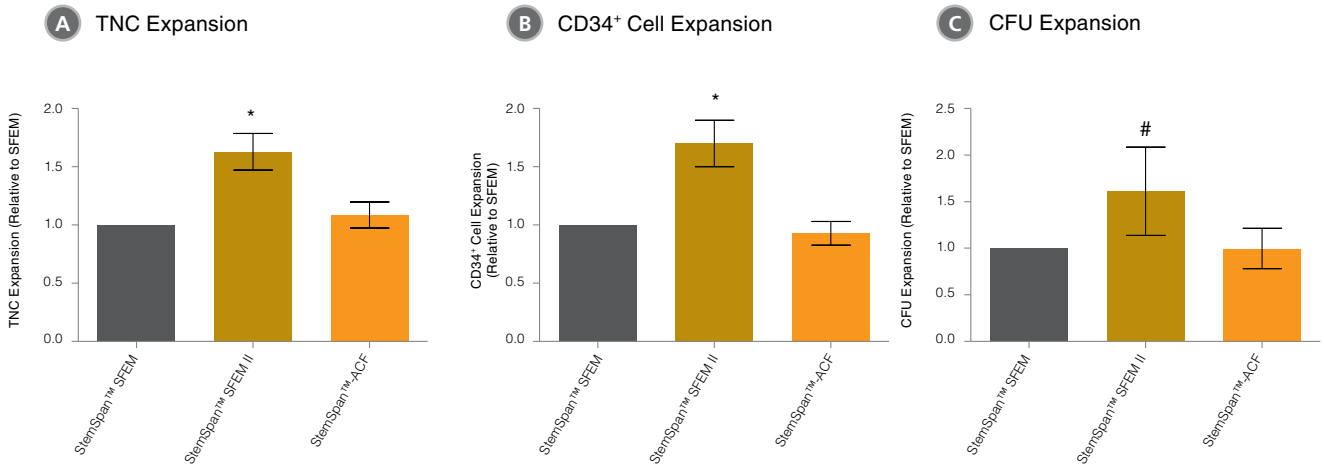

Figure 1. Comparison of CD34⁺ Cell Expansion in Different StemSpan™ Media Containing CD34⁺ Expansion Supplement

Average expansion of (A) total nucleated cells (TNCs), (B) CD34⁺ cells and (C) colony-forming units (CFUs), normalized relative to the values obtained in StemSpan™ SFEM (grey bars) after culturing CB-derived CD34⁺ cells for 7 days in StemSpan™ SFEM, SFEM II (gold bars) or -ACF (orange bars) media containing CD34⁺ Expansion Supplement. Vertical lines indicate 95% confidence limits, the range within which 95% of results will typically fall. Cell yields in StemSpan™ SFEM II were on average ~60% higher than in StemSpan ™ SFEM and StemSpan™-ACF (*$p < 0.001$; #$p < 0.05$; paired t-test, $n = 6$ in A and B; $n = 4$ in C).

Media and Supplements for CD34⁺ Cell Expansion

PRODUCT	DESCRIPTION	RECOMMENDED FOR
StemSpan™ SFEM 09600 (100 mL) 09650 (500 mL)	Serum-free expansion medium (SFEM) containing pre-tested bovine serum albumin, insulin, transferrin and supplements in Iscove's MDM	Serum-free culture of human HSPCs
StemSpan™ SFEM II 09605 (100 mL) 09655 (500 mL)	Enhanced version of StemSpan™ SFEM containing pre-tested bovine serum albumin, insulin, transferrin, and supplements in Iscove's MDM	Serum-free expansion of human HSPCs
StemSpan™-ACF 09805 (100 mL) 09855 (500 mL)	Animal component-free (ACF) medium containing only recombinant and synthetic components	Culture of human HSPCs in the absence of non-human animal-derived components
StemSpan™ CD34⁺ Expansion Supplement (10X) 02691 (10 mL)	Pre-mixed cocktail of recombinant human cytokines (Flt3L, SCF, IL-3, IL-6, TPO) and other additives	Selective expansion of human CD34⁺ HSPCs

For related products for HSPC research, including specialized culture and storage media, supplements, antibodies, cytokines, and small molecules, visit **www.stemcell.com/HSPCworkflow** or contact us at **techsupport@stemcell.com**. For available fresh and cryopreserved peripheral blood, cord blood and bone marrow products in your region, visit **www.stemcell.com/primarycells**.