

StemSpan™

Defined Media and Supplements for Hematopoietic Cell Expansion

Background

The ability to culture hematopoietic stem and progenitor cells (HSPCs) *in vitro* has been instrumental in advancing our understanding of hematopoiesis. As interest in this field has grown, so has the need for highly-defined, reliable and robust media for the expansion and lineage-specific differentiation of HSPCs.

Product Description

StemSpan™ media are available in serum-free, xeno-free and animal component-free formulations. All StemSpan™ media have been extensively tested in assays to expand cord blood (CB)- and bone marrow-derived CD34+ cells. StemSpan™ media does not contain cytokines or growth factors, which allows users the flexibility to prepare a medium that meets their specific requirements. StemSpan™ Expansion Supplements or custom cytokine cocktails may be added to StemSpan™ medium to support the expansion of CD34+ cells or drive the lineage-specific differentiation of CD34+ cells. The StemSpan™ T Cell Generation Kit has been developed to differentiate CB-derived CD34+ cells to T cells, without use of stromal cells.

StemSpan™ Applications:

- Expansion of CD34+ hematopoietic cells from normal human blood and bone marrow
- Generation of large numbers of erythroid progenitor cells, myeloid progenitor cells, megakaryocytes or T cell progenitors from human CD34+ cells
- Short- or long-term culture of human or mouse hematopoietic cells
- Identification of novel regulators of hematopoiesis

StemSpan™ Media

PRODUCT	DESCRIPTION	APPLICATIONS
StemSpan™ SFEM 09600 (100 mL) 09650 (500 mL)	StemSpan™ Serum-Free Expansion Medium (SFEM) contains pre-tested bovine serum albumin, insulin, transferrin and supplements in Iscove's MDM	<ul style="list-style-type: none"> • For the serum-free culture of human hematopoietic cells • Has also been used in the culture of mouse, non-human primate and canine hematopoietic cells
StemSpan™ SFEM II 09605 (100 mL) 09655 (500 mL)	<ul style="list-style-type: none"> • StemSpan™ SFEM II contains pre-tested bovine serum albumin, insulin, transferrin and supplements in Iscove's MDM • Enhanced version of StemSpan™ SFEM 	<ul style="list-style-type: none"> • For the serum-free culture of human hematopoietic cells • When combined with the appropriate supplement this medium supports the highest expansion and/or lineage-specific differentiation of hematopoietic cells*
StemSpan™ H3000 09800 (100 mL) 09850 (500 mL)	StemSpan™ H3000 is a xeno-free medium which contains only human-derived or recombinant human proteins	For the culture of human HSPCs in conditions devoid of non-human animal-derived components, where the presence of human plasma-derived components is acceptable
StemSpan™-ACF 09805 (100 mL) 09855 (500 mL)	StemSpan™ Animal Component-Free (ACF) expansion medium is the world's first commercial expansion medium that contains only recombinant and synthetic components	For applications in which a culture medium devoid of animal- or human-derived components is required, and for pre-clinical expansion that requires maximum lot-to-lot consistency

*Versus leading commercially available competitors tested, see Figure 1.

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.



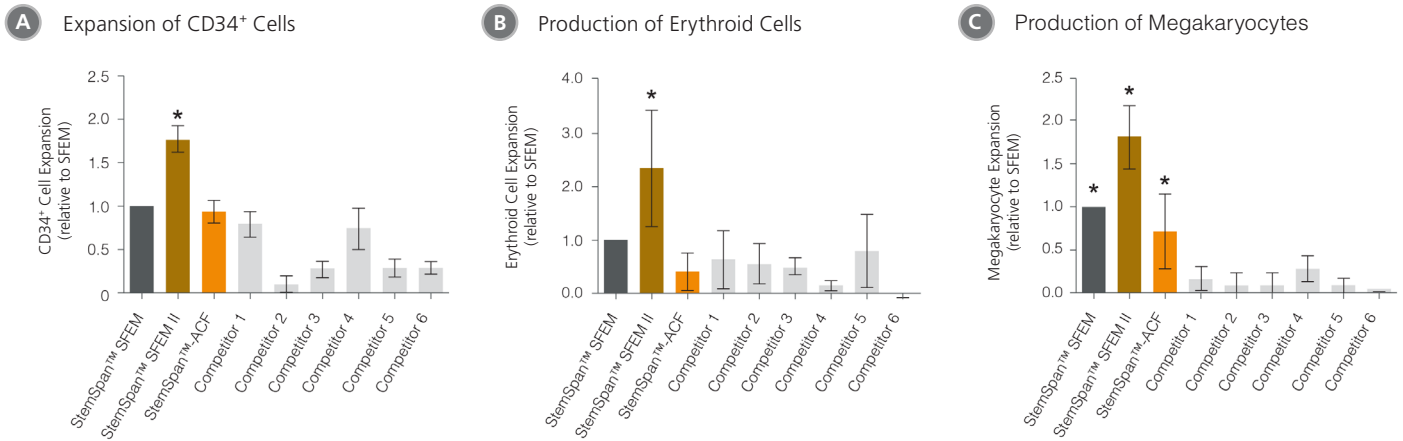


Figure 1. StemSpan™ SFEM II Containing StemSpan™ CD34⁺, Erythroid or Megakaryocyte Expansion Supplements Support Greater Expansion and/or Lineage-Specific Differentiation of Human CD34⁺ Cells Than Other Media Tested

Shown are the levels of fold expansion of CD34⁺ cells, erythroid cells or megakaryocytes, normalized relative to the expansion levels obtained in SFEM medium (dark gray bar), after culturing purified CD34⁺ CB cells in StemSpan™ SFEM, SFEM II (gold bar) and -ACF (orange bar), and 6 media from other suppliers (light gray bars; Competitor 1-6, which included, in random order, StemLine II (Sigma), HPGM (Lonza), HP01 (Macopharma), SCGM (Cellgenix), StemPro34 (Life Technologies) and X-Vivo 15 (Lonza)). Media were supplemented with (A) StemSpan™ CD34⁺ Expansion Supplement and cultured for 7 days, or (B) StemSpan™ Erythroid Expansion Supplement or (C) StemSpan™ Megakaryocyte Expansion Supplement, and cultured for 14 days. Vertical lines indicate 95% confidence limits, the range within which 95% of results fall. The numbers of CD34⁺ cells, erythroid cells or megakaryocytes produced in StemSpan™ SFEM II were significantly higher than in all other media (A: *p < 0.01, paired t-test, n = 6; B: *p < 0.05, paired t-test, n = 6; C: *p < 0.01, paired t-test, n = 6).

StemSpan™ Expansion Supplements

PRODUCT	DESCRIPTION	APPLICATIONS
CD34 ⁺ Expansion Supplement 02691 (10 mL)	10X concentrated supplement contains rhFlt3L, rhSCF, rhIL-3, rhIL-6, rhTPO and other additives	<ul style="list-style-type: none"> Recommended for selective expansion of human CD34⁺ HSPCs Stimulates greater CD34⁺ cell expansion compared to CC100 and CC110
Erythroid Expansion Supplement 02692 (1 mL)	100X concentrated supplement contains rhSCF, rhIL-3 and rhEPO	Stimulates the production of human erythroid cells by expansion and lineage-specific differentiation of human CD34 ⁺ cells
Megakaryocyte Expansion Supplement 02696 (1 mL)	100X concentrated supplement contains rhSCF, rhTPO, rhIL-6 and rhIL-9	Stimulates the production of human megakaryocytes by expansion and lineage-specific differentiation of human CD34 ⁺ cells
Myeloid Expansion Supplement 02693 (1 mL)	100X concentrated supplement contains rhSCF, rhTPO, rhG-CSF and rhGM-CSF	Stimulates the production of human granulocytes by expansion and lineage-specific differentiation of human CD34 ⁺ cells
Myeloid Expansion Supplement II 02694 (1 mL)	100X concentrated supplement contains Flt3L, SCF, TPO, M-CSF, GM-CSF and other supplements	Stimulates the production of human monocytes by expansion and lineage-specific differentiation of human CB-derived CD34 ⁺ cells

StemSpan™ Kits

PRODUCT	DESCRIPTION	APPLICATIONS
StemSpan™ T Cell Generation Kit 09940	Contains StemSpan™ SFEM II, StemSpan™ Lymphoid Progenitor Expansion Supplement (10X), StemSpan™ Lymphoid Differentiation Coating Material (100X) and StemSpan™ T Cell Progenitor Maturation Supplement (10X)	Stimulates the generation of pro-T cells and DP cells from CB-derived CD34 ⁺ cells

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