

# StemSpan™ SFEM



Scientists Helping Scientists™ | [WWW.STEMCELL.COM](http://WWW.STEMCELL.COM)

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

[INFO@STEMCELL.COM](mailto:INFO@STEMCELL.COM) • [TECHSUPPORT@STEMCELL.COM](mailto:TECHSUPPORT@STEMCELL.COM)

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

## Serum-free medium for culture and expansion of hematopoietic cells

Catalog #09600      100 mL  
#09650              500 mL

## Product Description

StemSpan™ Serum-Free Expansion Medium (SFEM) has been developed and tested for the in vitro culture and expansion of human hematopoietic cells, when the appropriate growth factors and supplements are added. This allows users the flexibility to prepare medium that meets their requirements. When combined with the appropriate cytokines, SFEM has been used for the culture and expansion of hematopoietic cells isolated from other species, including mouse, non-human primate, and dog (Bauer et al.; Miller & Eaves; Sandrin et al.; Zhang & Lodish). SFEM has also been used for culture of various other hematopoietic and non-hematopoietic cell types. Using appropriate StemSpan™ Expansion Supplements, SFEM may be used to expand CD34+ cells isolated from human cord blood, mobilized peripheral blood, or bone marrow samples, or to expand and differentiate lineage-committed progenitors to generate populations of erythroid, myeloid, or megakaryocyte progenitor cells.

StemSpan™ SFEM II (Catalog #09605) is an improved version of StemSpan™ SFEM that is further enriched to promote and support higher rates of CD34+ expansion and/or cell differentiation.

## Properties

- Storage:** Store at -20°C.
- Shelf Life:** Stable until expiry date (EXP) on label.
- Contains:**
- Iscove's MDM
  - Bovine serum albumin
  - Recombinant human insulin
  - Human transferrin (iron-saturated)
  - 2-Mercaptoethanol
  - Supplements

This product contains material derived from human plasma. Donors have been tested and found negative for hepatitis B surface antigen (HBsAg) and HIV-1 antibodies and/or HIV-1 antigen. However, this product should be considered potentially infectious and treated in accordance with universal handling precautions.

## Directions for Use

### PREPARATION OF COMPLETE MEDIUM

1. Thaw StemSpan™ SFEM at room temperature (15 - 25°C) or overnight at 2 - 8°C. Mix thoroughly.  
NOTE: If not used immediately, store at 2 - 8°C for up to 1 month. Alternatively, aliquot into tubes and store at -20°C. After thawing aliquots, do not re-freeze. Do not exceed the shelf life of the medium.
2. Add desired cytokines, growth factors, and other components to StemSpan™ SFEM. Mix thoroughly.  
NOTE: Added components and cells in sterile cell culture medium (e.g. Iscove's MDM or DMEM) should not exceed ~10% of total volume.
3. Add cells, mix thoroughly, and set up cultures as desired.

For complete instructions for CD34+ cell expansion using StemSpan™ media and StemSpan™ CD34+ Expansion Supplement (10X; Catalog #02691), refer to the PIS for the supplement (Document #10000000078), available at [www.stemcell.com](http://www.stemcell.com) or contact us to request a copy.

For a complete list of expansion supplements for use with StemSpan™ SFEM, see Notes and Tips. Refer to the Product Information Sheet (PIS) for each supplement for recommended cell expansion protocols with StemSpan™ media.

## ASSESSMENT OF HEMATOPOIETIC CELLS

Assessment of CD34+ cells before and after culture may be performed by flow cytometry using the following fluorochrome-conjugated antibody clones:

- Anti-Human CD34 Antibody, Clone 581 (Catalog #60013) or Clone 563 (Catalog #60119) or Clone 8G12 (Catalog #60121)
- Anti-Human CD45 Antibody, Clone HI30 (Catalog #60018) or Clone 2D1 (Catalog #60123)
- Anti-Human CD38 Antibody, Clone AT-1 (Catalog #60131) or Clone HIT2 (Catalog #60014)
- Anti-Human CD90 Antibody, Clone 5E10 (Catalog #60045)

## Notes and Tips

STEMCELL Technologies recommends the use of Human LDL (Catalog #02698) as a culture supplement. It has been pre-screened for the culture, expansion, and colony assay of human hematopoietic and non-hematopoietic cells in serum-free culture media. It promotes the proliferation and survival of human hematopoietic and other progenitor cells in culture, resulting in increased cell output in expansion cultures and increased colony numbers and/or colony size in colony assays. Selection of an optimal growth factor combination is dependent upon the source and type of cells and the experimental objectives of the researcher. StemSpan™ expansion supplements, described below, are suitable for use with StemSpan™ SFEM.

- StemSpan™ CD34+ Expansion Supplement (10X) (Catalog #02691)
  - Culture and expansion of large numbers of human CD34+ progenitor cells
  - Contains: rh SCF, rh TPO, rh IL-3, rh IL-6, rh Flt3 ligand, other additives
- StemSpan™ CC100 (Catalog #02690)
  - Culture and expansion of human hematopoietic cells
  - Contains: rh Flt3 ligand, rh SCF, rh IL-3, rh IL-6
- StemSpan™ CC110 (Catalog #02697)
  - Culture and expansion of human hematopoietic cells
  - Contains: rh Flt3 ligand, rh SCF, rh TPO
- StemSpan™ Erythroid Expansion Supplement (100X) (Catalog #02692)
  - Expansion and lineage-specific differentiation of human CD34+ cells into erythroid progenitor cells
  - Contains: rh SCF, rh IL-3, rh EPO
- StemSpan™ Megakaryocyte Expansion Supplement (100X) (Catalog #02696)
  - Expansion and lineage-specific differentiation of human CD34+ cells into megakaryocyte progenitor cells
  - Contains: rh SCF, rh TPO, rh IL-6, rh IL-9
- StemSpan™ Myeloid Expansion Supplement (100X) (Catalog #02693)
  - Expansion and lineage-specific differentiation of human CD34+ cells into granulocytes
  - Contains: rh SCF, rh TPO, rh G-CSF, rh GM-CSF
- StemSpan™ Myeloid Expansion Supplement II (100X) (Catalog #02694)
  - Expansion and lineage-specific differentiation of human CD34+ cells into monocytes
  - Contains: rh Flt3 ligand, rh SCF, rh TPO, rh M-CSF, rh GM-CSF, other additives

SCF = stem cell factor; EPO = erythropoietin; TPO = thrombopoietin; rh = recombinant human; IL = interleukin; Flt = fms-like tyrosine kinase

## RELATED PRODUCTS

For related products, including specialized culture and storage media, supplements, antibodies, cytokines, and small molecules, visit [www.stemcell.com/HSPCworkflow](http://www.stemcell.com/HSPCworkflow) or contact us at [techsupport@stemcell.com](mailto:techsupport@stemcell.com). For available fresh and cryopreserved peripheral blood, cord blood, and bone marrow products in your region, visit [www.stemcell.com/primarycells](http://www.stemcell.com/primarycells).

## References

- Abdelwahab SF et al. (2003) HIV-1-suppressive factors are secreted by CD4+ T cells during primary immune responses. *Proc Natl Acad Sci USA* 100(25): 15006–10.
- Agosti V et al. (2004) Critical role for Kit-mediated Src kinase but not PI 3-kinase signaling in pro T and pro B cell development. *J Exp Med* 199(6): 867–78.
- Baksh D et al. (2005) Soluble factor cross-talk between human bone marrow-derived hematopoietic and mesenchymal cells enhances in vitro CFU-F and CFU-O growth and reveals heterogeneity in the mesenchymal progenitor cell compartment. *Blood* 106(9): 3012–9. Bauer TR et al. (2006) Correction of the disease phenotype in canine leukocyte adhesion deficiency using ex vivo hematopoietic stem cell gene therapy. *Blood* 108(10): 3313–20.
- Gotze K et al. (2001) gp130-Stimulating designer cytokine hyper-interleukin-6 synergizes with murine stroma for long-term survival of primitive human hematopoietic progenitor cells. *Exp Hematol* 29(7): 822–32.
- Lansdorp PM & Dragowska W. (1992) Long-term erythropoiesis from constant numbers of CD34+ cells in serum-free cultures initiated with highly purified progenitor cells from human bone marrow. *J Exp Med* 175(6): 1501–9.
- Miller CL & Eaves CJ. (1997) Expansion in vitro of adult murine hematopoietic stem cells with transplantable lympho-myeloid reconstituting ability. *Proc Natl Acad Sci USA* 94(25): 13648–53.
- Petzer AL et al. (1996) Self-renewal of primitive human hematopoietic cells (long-term-culture-initiating cells) in vitro and their expansion in defined medium. *Proc Natl Acad Sci U S A* 93(4): 1470–4.
- Petzer AL et al. (1996) Differential cytokine effects on primitive (CD34+CD38-) human hematopoietic cells: novel responses to Flt3-ligand and thrombopoietin. *J Exp Med* 183(6): 2551–8.
- Sandrin V et al. (2002) Lentiviral vectors pseudotyped with a modified RD114 envelope glycoprotein show increased stability in sera and augmented transduction of primary lymphocytes and CD34+ cells derived from human and nonhuman primates. *Blood* 100(3): 823–32.
- Zandstra PW et al. (1998) Ontogeny-associated changes in the cytokine responses of primitive human haemopoietic cells. *Br J Haematol* 101(4): 770–8.
- Zhang CC & Lodish HF. (2005) Murine hematopoietic stem cells change their surface phenotype during ex vivo expansion. *Blood* 105(11): 4314–20.

PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED. FOR ADDITIONAL INFORMATION ON QUALITY AT STEMCELL, REFER TO [WWW.STEMCELL.COM/COMPLIANCE](http://WWW.STEMCELL.COM/COMPLIANCE).

Copyright © 2021 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, Scientists Helping Scientists, and StemSpan are trademarks of STEMCELL Technologies Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.