

Identification of Colonies Derived from Human Hematopoietic Progenitor Cells

Progenitor Cells	Description of Colonies Derived from Progenitor Cells	Cell Source Differences	Colonies
CFU-GEMM (Colony-forming unit – granulocyte, erythroid, macrophage, megakaryocyte)	<ul style="list-style-type: none"> A colony containing both erythroid (hemoglobinized) cells and 20 or more non-erythroid (not hemoglobinized) cells, i.e. granulocytes, macrophages, and/or megakaryocytes Typically has erythroid cells in the center and non-erythroid cells around the periphery, but non-erythroid cells can be concentrated on one side of the erythroid cells Colonies derived from CFU-GEMM are usually larger than colonies derived from CFU-GM or BFU-E Relatively infrequent in most cell samples (typically < 10% of total colonies) 	The frequency tends to be higher in cord blood and mobilized peripheral blood than in bone marrow, but variation between samples can be large	
CFU-GM (Colony-forming unit – granulocyte, macrophage)	<ul style="list-style-type: none"> A colony containing more than 20 granulocytes and/or macrophages Does not appear red or brown (i.e. cells are not hemoglobinized) Individual cells can usually be distinguished, particularly at the edge of the colony Large colonies may have one or more dense dark cores Does not require erythropoietin (EPO) for growth and differentiation 	Are generally larger in cord blood samples than in bone marrow or (mobilized) peripheral blood	
BFU-E (Burst-forming unit – erythroid)	<ul style="list-style-type: none"> A colony containing more than 200 erythroblasts in single or multiple clusters Appears red or brown, as the cells are hemoglobinized Difficult to distinguish individual cells within each cluster Develops in medium containing EPO and other cytokines, particularly interleukin-3 (IL-3) and stem cell factor (SCF) 	Are generally larger and have more clusters in cord blood than in bone marrow or (mobilized) peripheral blood	
CFU-E (Colony-forming unit – erythroid)	<ul style="list-style-type: none"> A colony containing 8 – 200 erythroblasts in one to two small clusters Appears red or brown, as the cells are hemoglobinized Difficult to distinguish individual cells within the colony Develops in medium that contains EPO 	More frequent in bone marrow than in umbilical cord blood and (mobilized) peripheral blood	

Human MethoCult™ Formulations

PRODUCT NAME	CATALOG #	FORMAT	PROGENITOR CELLS DETECTED	SCF, GM-CSF, IL-3	G-CSF	IL-6	EPO
MethoCult™ H4034 Optimum	04034	100 mL	CFU-E, BFU-E, CFU-GM, CFU-GEMM	•	•		•
	04044	24 x 3 mL					
MethoCult™ H4035 Optimum without EPO	04035	100 mL	CFU-GM	•	•		
MethoCult™ H4434 Classic	04434	100 mL	CFU-E, BFU-E, CFU-GM, CFU-GEMM	•			•
	04444	24 x 3 mL					
MethoCult™ H4534 Classic without EPO	04534	100 mL	CFU-GM	•			
	04544	24 x 3 mL					
MethoCult™ H4435 Enriched	04435	100 mL	CFU-E, BFU-E, CFU-GM, CFU-GEMM	•	•	•	•
	04445	24 x 3 mL					
MethoCult™ H4535 Enriched without EPO	04535	100 mL	CFU-GM	•	•	•	
	04545	24 x 3 mL					

Other MethoCult™ formulations, including serum-free formulations and formulations that allow the addition of cytokines, are available. Visit our website at www.stemcell.com for more information.

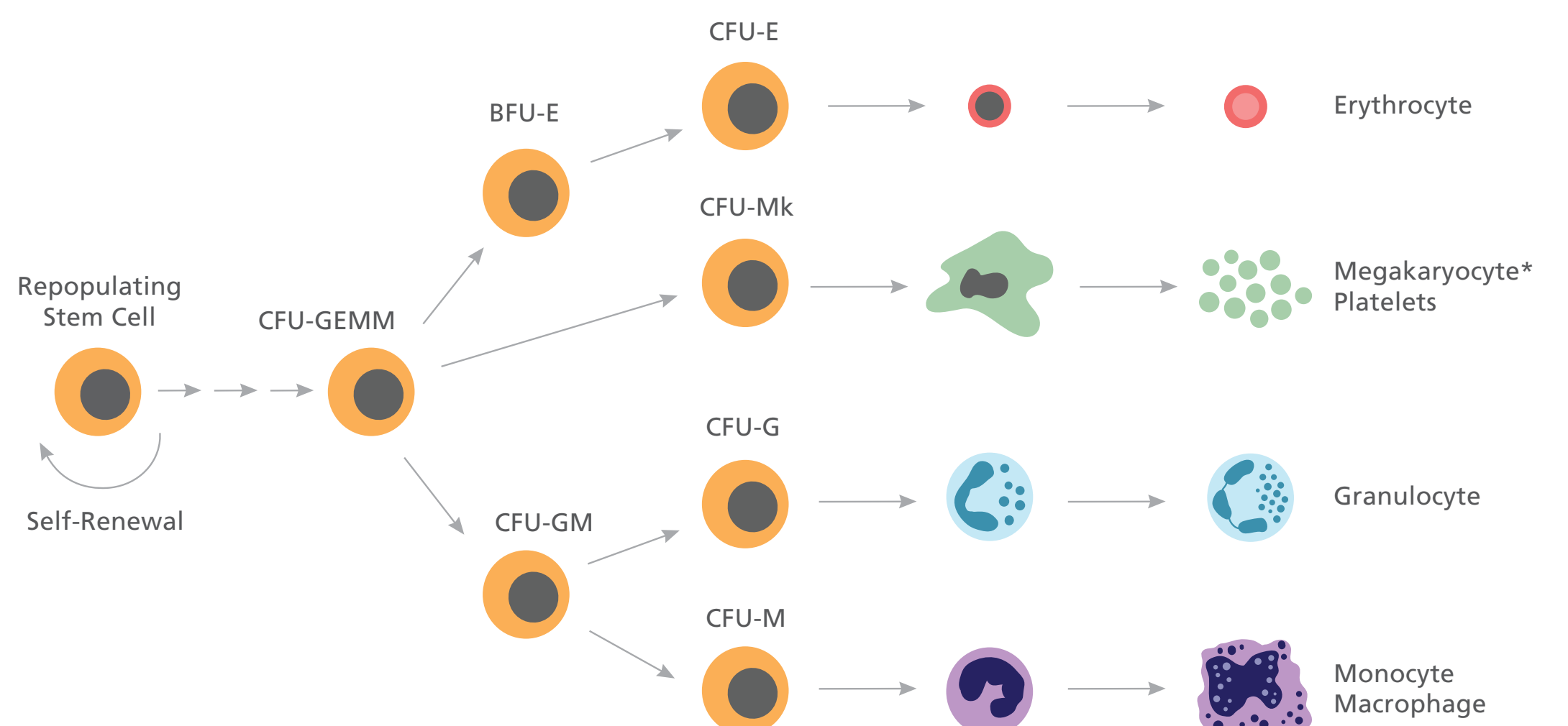
Other Equipment Required to Perform Colony Assays

PRODUCT DESCRIPTION	CATALOG #	QUANTITY	APPLICATIONS
Iscove's Modified Dulbecco's Medium (IMDM) with 2% Fetal Bovine Serum	07700	100 mL	• Washing hematopoietic cells
Blunt-End Needles	28110	100	• Aliquoting MethoCult™ and plating cultures • Recommended for prevention of needle-stick injuries
	28120	2000	
3 cc Syringes	28230	30	• Aliquoting MethoCult™ and plating cultures • Syringes and blunt-end needles are recommended when dispensing MethoCult™ • The semi-solid medium will stick to the inside of a standard pipette, resulting in a less accurate volume
	28240	100	
35 mm Dishes for Culture in MethoCult™	27100	10	• Optimal colony growth without supporting adherent cells
	27150	500	
60 mm Gridded Scoring Dishes	100-0085	20	• A 35 mm culture dish fits inside the 60 mm gridded scoring dish, which is a standard size for most microscope stages • Allows for reproducible and accurate scoring of colonies by ensuring areas of the dish are not counted more than once or not missed
	38068	500	

A high-quality inverted microscope with 2X, 4X, and 10X planar objectives, a stage holder for a 60 mm gridded dish, and a blue filter are required. A differential counter allows colonies of different lineages to be counted at the same time.

The Hematopoietic Hierarchy

Representation of production of mature cells from stem and progenitor cells.



Stem Cells | Multipotent Progenitor Cells | Committed Progenitor Cells | Precursor Cells | Mature Cells

*The colony-forming unit – megakaryocyte (CFU-Mk) is detected using collagen-based MegaCult™-C medium

A variety of resources are available on our website, including colony identification tutorials and an instructional video for setting up the CFU assay.

Visit www.stemcell.com/humancfuwallchart to learn more.