



Proficiency Testing

For Hematopoietic Progenitor Assays Using Frozen Cord Blood

Available Globally!
Worldwide Participation Using
Frozen Cord Blood Samples

Join our Proficiency Testing Program to:

- Reduce the variability in your cell processing and colony scoring techniques
- Compare your colony counts to other centers worldwide
- Receive personalized reports providing detailed analysis of data
- Identify areas that may benefit from continued education and training

Background

Since their introduction more than 30 years ago, colony-forming unit (CFU) assays have been used extensively for research and clinical applications. They have been used for the identification of stimulatory and inhibitory growth factors, as supportive diagnostic assays for myeloproliferative disorders and leukemias, and for the evaluation of the hematopoietic proliferative potential of bone marrow, cord blood and mobilized peripheral blood samples for clinical transplantation.¹ Although bone marrow was the original cell source of choice for transplantation, cord blood offers a myriad of advantages. These advantages include the ease of procurement, no risk to donors, ethnic balance in cord blood repositories and ease of transport of frozen banked products.

Some of the limitations of using cord blood products for transplantation include the limited numbers of nucleated cells, CD34⁺ cells and progenitors, which may be up to 10-fold fewer than in bone marrow samples. These low numbers have an effect on donor hematopoietic reconstitution and the kinetics of engraftment.² Although cell expansion protocols have not been very successful, there are encouraging reports that the administration of two partially matched HLA cord blood units may overcome the cell dose barrier, especially in larger patients.³

Studies at some clinical institutions have found a correlation between CD34⁺ cell content or progenitor content of cord blood units and myeloid engraftment after transplantation. However, the total nucleated cell dose of the transplanted cord blood unit remains the best global predictor of engraftment, possibly due to the variability in methods of assessing and reporting the other parameters.⁴ This Proficiency Testing Program aims to address this issue and reduce some of the variability associated with performing CFU assays using cord blood.

Description of Proficiency Test

Participants will receive a worksheet providing instructions for each step in the proficiency test, as well as a Technical Manual (for first time participants) containing detailed protocols for CFU assays using MethoCult™. Participants will be assessed on their proficiency at performing colony assays for cord blood samples, focusing on the following aspects:

1. Cell Counting, Preparing Cell Dilution and Cell Inoculation

Participants will be provided with frozen human cord blood cells*, MethoCult™ methylcellulose-based medium containing recombinant cytokines, and additional reagents and supplies required for initiating cultures.

Participants will thaw frozen CB cells, perform a TNC count, assess sample viability and prepare an appropriate pre-determined cell dilution to inoculate in MethoCult™ medium for the CFU assay. Cultures will be incubated for 14 days at 37°C, 5% CO₂.

***POTENTIALLY BIOHAZARDOUS:** Cord blood samples are obtained from normal deliveries, but cannot be guaranteed free of pathogenic agents, and should therefore be considered potentially infectious and handled accordingly.

2. Colony Enumeration

Participants will be provided with a gridded scoring dish to assist with colony enumeration.

Following 14 days in culture, participants will enumerate erythroid (BFU-E), granulocyte/macrophage (CFU-GM) and multi-lineage (CFU-GEMM) colonies.

3. Colony Identification

Photographs of CFUs from human cord blood samples will be posted on our website for identification purposes.

Participants will be tested for their ability to identify granulocyte/macrophage, erythroid, and multi-lineage colonies from the photographs displayed.

Submission of Results

Prior to a specified deadline, participants will submit data to STEMCELL Technologies Inc. for compilation and statistical analysis. The worksheet provided should be used for direct entry of assay results, and completed forms can be submitted to STEMCELL Technologies by fax transmission or e-mailed to proficiency@stemcell.com. Data can also be submitted electronically via our website.

Analysis of Data

STEMCELL Technologies will compile and statistically analyze all valid data received by the submission deadline. A comprehensive report including graphs and tables will be generated and returned to each participant. Participants will be able to determine their individual data points by their anonymous participant ID number.

For further information, please visit our website at www.stemcell.com or our Proficiency Testing page at www.proficiencytesting.com. You can also contact us at our dedicated e-mail address: proficiency@stemcell.com.

References

1. Gordon MY: Human haemopoietic stem cell assays. *Blood Rev* 7: 190, 1993
2. Laughlin MJ Eapen M, Rubinstein P et al.: Outcomes after transplantation of cord blood or bone marrow from unrelated donors in adults with leukemia. *N Eng J Med* 351: 2265, 2004
3. Barker JN, Weisdorf DJ, DeFor TE et al.: Transplantation of 2 partially HLA-matched umbilical cord blood units to enhance engraftment in adults with hematological malignancy. *Blood* 105: 1343, 2005
4. Prasad VK, Mendizabal A, Parikh SH et al.: Unrelated donor umbilical cord blood transplantation for inherited metabolic disorders in 159 pediatric patients from a single center: influence of cellular composition of the graft on transplantation outcomes. *Blood* 112: 2979-2989, 2008

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Frozen Cord Blood Proficiency Testing Program

Registration Form for Countries Serviced by a Distributor

If you have any questions, please contact us at: proficiency@stemcell.com. Space is limited, please register early.

February 2015

For registration in our February 2015 Frozen Cord Blood Proficiency Testing Program, completed forms must be received no later than **January 9, 2015**.

PARTICIPANT FIRST AND LAST NAME	E-MAIL ADDRESS
1.	
2.	
3.	
4.	
5.	

September 2015

For registration in our September 2015 Frozen Cord Blood Proficiency Testing Program, completed forms must be received no later than **September 4, 2015**.

PARTICIPANT FIRST AND LAST NAME	E-MAIL ADDRESS
1.	
2.	
3.	
4.	
5.	

An e-mail address is required for each participant. All correspondence with participants, including cell plating concentration and final reports, is done via e-mail.

Customer Information

Institution: _____
Shipping Address: _____
Department: _____
Principal Investigator: _____ Email: _____
Phone Number: _____ Fax Number: _____
Shipping Address: _____
Signature: _____

Program Costs

Please contact your regional distributor to register the first participant from a laboratory (Catalog #00608) or additional participants from a laboratory (Catalog #00609). Our distributor's contact information are listed at the following link, please select your country from the drop-down menu: www.stemcell.com/en/Contact-Us.com.

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