



# 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 cell (CFC) 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.<sup>1</sup> 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<sup>+</sup> 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.<sup>2</sup> 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.<sup>3</sup>

Studies at some clinical institutions have found a correlation between CD34<sup>+</sup> 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.<sup>4</sup> This Proficiency Testing Program aims to address this issue and reduce some of the variability associated with performing CFC 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 CFC 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 CFC assay. Cultures will be incubated for 14 days at 37°C, 5% CO<sub>2</sub>.

**\*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 CFCs 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](mailto: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](http://www.stemcell.com) or our Proficiency Testing page at [www.proficiencytesting.com](http://www.proficiencytesting.com). You can also contact us at our dedicated e-mail address: [proficiency@stemcell.com](mailto: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

For prompt confirmation, please fax your completed form to Customer Service at: +1 604 877 0704. If you have any questions, please contact us at our dedicated Proficiency Testing e-mail address: [proficiency@stemcell.com](mailto:proficiency@stemcell.com). Please note that pre-payment is required for proficiency testing programs.

Space is limited, please register early.

### September 2012

For registration in our September 2012 Frozen Cord Blood Proficiency Testing Program, completed forms must be received no later than **August 24, 2012**. Confirmation of registration will be e-mailed upon receipt of completed registration form with payment.

PARTICIPANT FIRST AND LAST NAME	E-MAIL ADDRESS
1.	
2.	
3.	
4.	
5.	
6.	

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.

### Billing Information

Institution: \_\_\_\_\_

Department: \_\_\_\_\_

Principal Investigator: \_\_\_\_\_ Email: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Shipping Address: \_\_\_\_\_

Billing Address: \_\_\_\_\_

Signature: \_\_\_\_\_

### Fee

Single participants will be charged a standard fee (Catalog #00608), and each additional participant from the same laboratory listed on the registration form will be charged a separate fee (Catalog #00609). Please visit our website at [www.proficiencytesting.com](http://www.proficiencytesting.com) for pricing. Additional shipping charges may apply to posted prices.

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