Dear Colleague,

Our August newsletter has been compiled to inform you on what is happening in the stem cell industry, exciting developments that have taken place as well as update you on what has been happening at Netcells Biosciences.

**Storage of Mesenchymal Stem Cells**

Mesenchymal stem/stromal cells (MSC) are being widely studied in research and in clinical trials. As described in previous newsletters, their useful properties include the ability to modulate the patient’s immune system, promote cell growth, and to differentiate into more specialized cell types. This amazing potential has been explored in a large scope of diagnoses such as graft versus host disease (GvHD), rheumatoid arthritis, cardiomyopathy, liver cirrhosis, Alzheimer’s, spinal cord injury, chronic wounds, and diabetes among many others.

In 2013 more than 5600 articles were published (accessed via PubMed) with MSC as main subject, and during the present year around 1000 papers were already published under the same subject. Demonstrating the medical potential around MSC, 372 clinical trials are ongoing and 17% of them use umbilical cord tissue (UC) as the only MSC source.

The article in the Parent’s Guide to Cord Blood May newsletter describes various ways of extracting and storing mesenchymal stem cells from cord tissue. Netcells employs the method of segmented cord tissue storage. This is a simple, cost effective way of storing cord tissue. Ensuring viability of tissue and the cells prior to storage is of utmost importance and Netcells does this testing on each sample of cord tissue stored. Validation testing is also done to prove that MSC’s can be isolated from these cord segments when they are thawed after prolonged storage. MSC’s are robust cells that are easily isolated and cultured from cord tissue and hold huge potential for future clinical applications.

**References**

1. Parents’ Guide Cord Blood Foundation, Newsletter May 2014,
   Pedro Silva Couto, Instituto Superior Técnico, Portugal.
Cord Blood Transplant for Sickle Cell disease and Thalassemia

Transplantation of haematopoietic stem cells from umbilical cord blood and bone marrow of HLA matched siblings has been shown to be successful in the treatment of thalassemia and sickle cell disease. Disease free survival rates near 80-95% for both conditions. However, only about 20% of Africans and Asians find HLA matched donors. Research has been conducted using related and unrelated cord blood transplantation from HLA mis-matched donors. Tolerability of HLA mis-match with relatively low rates of acute and chronic graft-vs-host disease, make umbilical cord blood a potentially attractive option for those with haemoglobinopathy. However, limitation of umbilical cord blood was found to be the relative low cell dose per unit which lead to primary graft failure. Conclusions have been drawn that umbilical cord blood units containing cell doses of > 5x 10^7/kg could be used in the treatment of haemoglobinopathies.

This highlights the need to collect as much cord blood at birth as possible to ensure a large cell dose for storage. Occasional this is not possible due to birth complications and parents must be counselled on the implications of storing cord blood units with lower cell counts.

However, the transplant community continues to make enormous strides in this transplant realm in areas of immunogenetics, stem cell expansion, conditioning regimens, and supportive care. This has allowed the development of new studies that are currently ongoing, exploring ways to make cord blood transplantation successful and safer.

Go to: http://www.virgin.com/richard-branson/celebrating-virgin-health-banks-first-successful-stem-cell-transplant to read an anecdotal article of a successful umbilical cord blood transplant done with a HLA matched sibling for Sickle Cell disease. The transplant was done through the Virgin Health Bank.

References
Optimal Umbilical cord blood and tissue collection

Netcells has a DVD that is specifically aimed to arm Healthcare Professionals with all the necessary information on how to optimally collect umbilical cord blood and tissue at the birth of a baby.

Go to: https://www.netcells.co.za/baby-medical-professionals.php to view this 8 minute clip.

International Accreditation

In the February Newsletter, Netcells announced that they had once again achieved accreditation for their cord blood services. Netcells is accredited by the American Association of Blood Banks (AABB) which is the certification of choice for blood banking, transfusion medicine, blood management and cellular therapies and is recognised worldwide.

To find out more about the AABB Accreditation Program, go to: https://www.netcells.co.za/accreditation.php

What does Accreditation really mean? Go to: https://www.netcells.co.za/documents/accreditation-detailer.pdf
Cord Blood Serum Eye Drops

Umbilical cord blood serum represents a promising therapeutic approach for the healing of damaged corneal and conjunctival epithelium, and symptom relief for severe dry eyes. Growth factors and cytokines contained in cord blood serum are essential for the proliferation, differentiation and maturation of normal ocular surface epithelium. Umbilical cord blood serum can easily be collected in large volumes during child birth. The serum is processed, tested and stored frozen (-80°C), ready for use.

Historically, autologous peripheral blood serum has been used to heal epithelial defects in the eye and in the treatment of severe dry eyes. Cord blood serum eye drops are found to be more effective as assays have shown that the levels of growth factors in umbilical cord serum are 2-3 times higher than in peripheral blood serum. [Sharma et al. 2010] The efficacy of cord serum eye drops has been demonstrated in conditions, ranging from severe dry eye with or without primary Sjogren syndrome to ocular graft-versus-host-disease, persistent epithelial defects, recurrent corneal erosions, chemical burns, and neurotrophic keratitis. [Versura et al. 2013]

Netcells Biosciences is the only supplier of cord blood serum eye drops in South Africa. The serum is extracted from donated umbilical cord blood. The donation of the umbilical cord blood is co-ordinated by the Netcare Organ Donor and Transplant Unit and is processed under stringent quality controlled processes.

For more information, contact Netcells on 011 697 2900 or info@netcells.co.za

My Netcells Experience

What has your experience with Netcells been like? To ensure that we are constantly offering the best possible service to both you and your patients we would like you to share your experience with us. Mail catherine.brazier@netcells.co.za

Best Regards

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