

A close-up photograph of a woman with her eyes closed, gently kissing a newborn baby on the forehead. The baby is also sleeping with its eyes closed. The woman's hair is dark and pulled back. The baby is wearing a white hospital gown. The background is softly blurred.

**Why you should  
store your umbilical  
cord blood and  
cord tissue...**

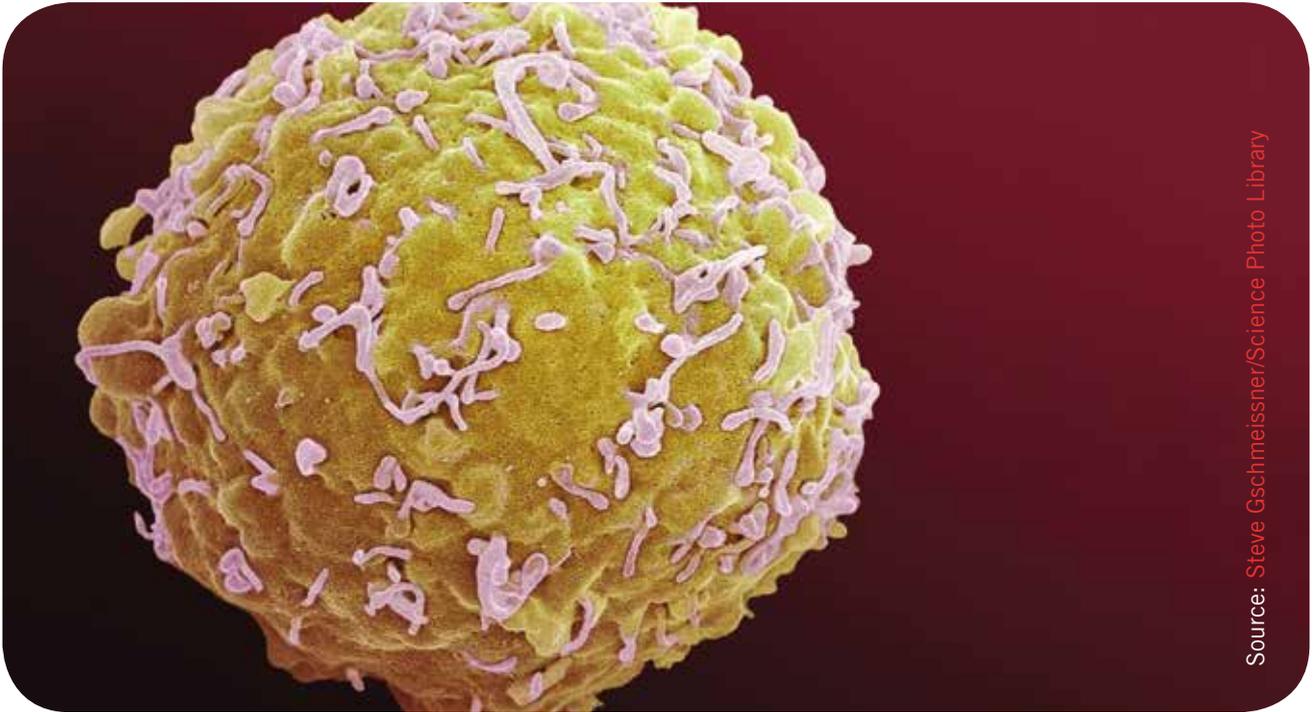


**Life is full of unique moments.** Moments that will never pass your way again. Like the first time you hold your newborn baby in your arms. In that instant, you'll realise that your life will never be the same. Now you have another life, utterly dependent on you. You will have a million and one decisions to make as they grow and develop, to protect and care for them.



And you have one decision to make before your baby is even born. Whether or not to preserve your baby's umbilical cord blood and/or tissue. It's one of the easiest yet most important decisions you'll probably ever make. So you need to find out all you can about something that could one day help to protect your child's life... **and we at Future Health Biobank would like to help.**

# What are stem cells?



Source: Steve Gschmeissner/Science Photo Library

Stem cells are our body's 'building blocks'. Their job is to multiply and transform into the cells that make up our blood, bones, tissue, tendons, organs, in fact everything that makes us physically what we are.

Stem cells have the ability to transform into any specialised cell, and in this way they restore and repair tissue during growth and through wear and tear.

## Where do they come from?

In the past, the main source of stem cells used to be bone marrow.

Over the last 20 years, however, exciting developments have taken place using stem cells taken from the umbilical cord - something that is generally discarded at birth.

Rather than being waste, it has been discovered that the umbilical cord blood and tissue are one of the richest sources of stem cells in the body with even better regenerative potential than bone marrow stem cells.

These stem cells are today being used to treat thousands of people for an ever increasing list of widely accepted medical conditions.

# Advantages of using Cord Blood over Bone Marrow

- Because cord blood is more primitive than bone marrow, there is a lower chance that these cells will attack the recipient's body, resulting in a lower incidence of graft-versus-host disease (GVHD). Cord blood cells also have a higher rate of engraftment and are more tolerant of HLA mismatches.
- It is believed that stem cells found in cord blood have greater regenerative properties since they are younger than bone marrow.
- A Cord blood unit is available immediately since it is already characterized and deposited in a bank compared to on an average 4 months of waiting time for bone marrow stem cells, which have to be extracted once consent is given if a suitable HLA-matched donor is ever found.
- Bone marrow is more likely to be contaminated with viruses such as Epstein-Barr or Cytomegalovirus.

## When can they be collected?

Although bone marrow stem cells can be collected at any time, umbilical cord blood can only be collected at birth. That's why this important opportunity comes along literally once in a lifetime.

Immediately after the birth of your new baby, after the cord is clamped and cut, the cord blood and cord tissue can be collected by a healthcare professional. The whole procedure takes less than 10 minutes.

## How can they save lives?

For a number of years, cord blood stem cell transplantation has been part of the treatment for serious conditions of the blood, the immune system and some forms of cancer.

Various forms of leukaemia, blood disorders, anaemias and autoimmune conditions are just some of the diseases treated this way, and this now forms part of standard medical practice. Recent clinical studies of stem cell transplantations for heart repair<sup>3-6</sup>, following a myocardial infarction or heart failure<sup>7,8</sup>, are leading new revolutionary therapeutic methods in regenerative medicine. The most important new areas of application for cord blood are the treatments of Type 1 Diabetes<sup>9</sup>, brain injury and cerebral palsy.

# Why Future Health Biobank stores the stem cells (volume reduced method) rather than whole blood

We feel as a company that you should be aware of this very important debate as this may well influence your decision on who you choose to bank your child's stem cells. Please be reassured that Future Health Biobank uses the volume reduction method which is also the industry standard used in the (NHS) Public Banks throughout the UK.



	VOLUME REDUCTION	WHOLE BLOOD
<b>Conforming to general trends in cord blood banking</b>	The gold standard is volume reduction. We conform 100% to published trends in cord blood banking and we operate in accordance to general best practise guidelines <sup>1</sup>	This is not the method used by the NHS and Public Banks. Therefore the use of your child's sample may be limited in the future
<b>High recovery and viability of extracted Stem Cells</b>	We remove the Red Blood Cells before storage because their absence has been shown to assist in a high recovery and viability of mononuclear cells post-thawing. Crenated red blood cells also reduce stem cell recovery <sup>2</sup>	The freezing process will lyse <sup>3</sup> the red blood cells and they will release haemoglobin and other intracellular material which may have detrimental effects on the sample. The sample may have to be washed which in turn could reduce the recovery of the stem cells
<b>Adverse patient reactions due to presence of red blood cells</b>	We minimise the number of red blood cells in the sample prior to storage, and in turn minimise ABO/Rh blood type incompatibilities to the donor	High levels of red blood cells in a transplant may result in adverse reactions due to blood type incompatibility
<b>Method employed in current clinical practice</b>	Volume reduced cord blood samples are currently being used in clinical procedures as part of general best practise guidelines	Damage may be incurred to the sample if it is processed post-thawing. Ultimately a sample may have to be volume reduced before use so that only the stem cells are transplanted
<b>Very Small Embryonic Like (VSEL) Cells<sup>4</sup></b>	The presence of VSELS in cord blood has not been extensively studied yet. The clinical application of VSELS is also not known since volume reduced cord blood unit engraftments have been highly successful in treating leukaemia patients to-date	May be present post-thawing, but have controversial and as yet unproven clinical value. Studies are still needed to demonstrate post-thaw viability of VSELS
<b>Cord Blood Factor</b>	Our samples are handled under the strictest guidelines to ensure that they can quickly adapt to their new environment if transplanted. Apart from the volume reduced sample we also cryopreserve samples of all the components of cord blood which may be proved to be useful in the future	There is no evidence in the scientific literature that cord blood factor exists
<b>Thermal stability</b>	Our samples are thermally stable because the cells are stored in a small volume	Samples that are large due to the presence of red blood cells and plasma have poor thermal uniformity. Stored samples may also have inconsistent volumes, meaning that not all samples will have the same chance of survival. This may affect the lifetime of the cells
<b>Cryopreservative (DMSO)</b>	In order to protect the cells during cryopreservation we add a chemical cryopreservative (DMSO) to your biological sample. Since we reduce the volume of your sample, we only need to use a small amount of DMSO, which is easy to remove post-thawing	The larger volume of whole blood stored requires a larger amount of DMSO to be added to the sample. Larger amounts of DMSO are less easily removed post-thawing, may be damaging to our internal organs and may have a negative effect in general due to its toxicity
<b>£ Costs reflective of processing</b>	Our costs are very competitive and reflect the amount of processing we do to your sample to ensure that we reduce all anticipated complications if it is used	Since the sample is not processed, but simply frozen down, you may want to ensure that if you pay for this service the cost is reflective of the minimal handling service provided
<b>£ Additional costs</b>	No additional payments for processing will be requested from Future Health Biobank because we have already ensured we can do all we can for the optimal use of your sample	Whole blood samples may eventually need further processing to remove the red blood cells. This may incur an additional fee, as well as possible fees to ensure compliance with general best practise guidelines

<sup>1</sup> This method was first implemented by the New York Cord Blood Bank in compliance with Clinical Good Tissue Practise (Trends in National Blood Collection and Cord Blood Banking, Neil P. Byrd and Blake S. Terry, 2012).

<sup>2</sup> Crenation is when a cell becomes distorted in shape because it is taken out of its normal physiological environment, as happens if it is frozen.

<sup>3</sup> Lysis of a cell refers to rupture of the cell membrane so that the contents of the cell are released.

<sup>4</sup> VSELS are very small embryonic like stem cells which may respond to a primitive population of cells which also have regenerative potential

# Conditions that could benefit from stem cell transplantation

Although a large number of therapies are allogeneic, most of these therapies are not applied to patients frequently. In contrast, there is a smaller number of applications that do require autologous treatment but there are a lot more people that require this type of treatment.

## Standard Therapies

### Anaemias

- Severe Aplastic Anaemia
- Congenital Dyserythropoietic Anaemia
- Fanconi Anaemia
- Paroxysmal Nocturnal Haemoglobinuria (PNH)
- Pure Red Cell Aplasia

### Inherited Platelet Abnormalities

- Amegakaryocytosis / Congenital Thrombocytopenia
- Glanzmann Thrombasthenia

### Myeloproliferative Disorders

- Acute Myelofibrosis
- Agnogenic Myeloid Metaplasia (Myelofibrosis)
- Polycythemia Vera
- Essential Thrombocythemia

### Inherited Immune System Disorders -

#### Severe Combined Immunodeficiency (SCID)

- SCID with Adenosine Deaminase Deficiency (ADA-SCID)
- SCID which is X-linked
- SCID with absence of T & B Cells
- SCID with absence of T Cells, Normal B Cells
- Omenn Syndrome

### Inherited Immune System Disorders

- Kostmann Syndrome
- Myelokathexis
- Ataxia-Telangiectasia
- Bare Lymphocyte Syndrome
- Common Variable Immunodeficiency
- DiGeorge Syndrome
- Leukocyte Adhesion Deficiency
- Lymphoproliferative Disorders (LPD)
- Lymphoproliferative Disorder, X-linked
- Wiskott-Aldrich Syndrome

### Phagocyte Disorders

- Chediak-Higashi Syndrome
- Chronic Granulomatous Disease
- Neutrophil Actin Deficiency
- Reticular Dysgenesis

### Cancers in the bone marrow (Plasma Cell Disorders)

- Multiple Myeloma
- Plasma Cell Leukaemia
- Waldenstrom's Macroglobulinaemia

### Other cancers

- Neuroblastoma
- Retinoblastoma

### Acute Leukaemia

- Acute Lymphoblastic Leukaemia (ALL)
- Acute Myelogenous Leukaemia (AML)
- Acute Biphenotypic Leukaemia
- Acute Undifferentiated Leukaemia

### Chronic Leukaemia

- Chronic Myelogenous Leukaemia (CML)
- Chronic Lymphocytic Leukaemia (CLL)
- Juvenile Chronic Myelogenous Leukaemia (JCML)
- Juvenile Myelomonocytic Leukaemia (JMML)

### Myelodysplastic Syndromes

- Refractory Anaemia (RA)
- Refractory Anaemia with Ringed Sideroblasts (RARS)
- Refractory Anaemia with Excess Blasts (RAEB)
- Refractory Anaemia with Excess Blasts in Transformation (RAEB-T)
- Chronic Myelomonocytic Leukaemia (CMML)

### Lymphomas

- Hodgkin's Disease
- Non-Hodgkin's Lymphoma (Burkitt's Lymphoma)

### Inherited Red Cell Abnormalities

- Beta Thalassemia Major
- Blackfan-Diamond Anaemia
- Pure Red Cell Aplasia
- Sickle Cell Disease

**Allogeneic** - patient receives stem cells from a matching donor, either a sibling or an unrelated donor

**Autologous** - patient receives their own stem cells

CIBMTR (Center for all International Blood & Marrow Transplant Research) collect data on all types of stem cell transplantations performed. The data demonstrates that the majority of transplants are in fact autologous. For example, in the United States out of the 16790 transplants carried out in the year 2009, 9778 (58.2%) were autologous.

## Standard Therapies continued

### Tranplants for Inherited Disorders

- Cartilage-Hair Hypoplasia
- Gunther's Disease (Erythropoietic Porphyria)
- Hermansky-Pudlak Syndrome
- Pearson's Syndrome
- Shwachman-Diamond Syndrome
- Systemic Mastocytosis

### Transplants for Inherited Metabolic Disorders

#### Mucopolysaccharidoses (MPS) Storage Diseases

- Mucopolysaccharidoses (MPS)
- Hurler's Syndrome (MPS-IH)
- Scheie Syndrome (MPS-IS)
- Hunter's Syndrome (MPS-II)
- Sanfilippo Syndrome (MPS-III)
- Morquio Syndrome (MPS-IV)
- Maroteaux-Lamy Syndrome (MPS-VI)
- Sly Syndrome, Beta-Glucuronidase Deficiency (MPS-VII)
- Mucopolipidosis II (I-cell Disease)

#### Lysosomal Storage Diseases

- Niemann-Pick Disease
- Sandhoff Disease
- Wolman Disease

#### Leukodystrophy Disorders

- Adrenoleukodystrophy (ALD)/Adrenomyeloneuropathy (AMN)
- Krabbe Disease (Globoid Cell Leukodystrophy)
- Metachromatic Leukodystrophy
- Pelizaeus-Merzbacher Disease

#### Other Disorders

- Lesch-Nyhan Syndrome
- Osteopetrosis

## Therapies in Clinical Trials

### Transplants for Cancerous Tumours

- Breast cancer
- Ewing's sarcoma
- Renal cell carcinoma

### Transplants for Disorders of Cell Proliferation or Metabolism

- Cystic Fibrosis
- Histiocytic Disorders:
  - Familial Erythrophagocytic Lymphohistiocytosis
  - Haemophagocytosis
  - Langerhans Cell Histiocytosis (LCH or Histiocytosis - X)
- Epidermolysis Bullosa

### Gene Therapy

- Glanzmann Thrombasthenia
- Severe Combined Immunodeficiency (SCID)
- SCID with Adenosine Deaminase Deficiency (ADA-SCID)
- SCID which is X-linked
- Beta-Thalassemia
- Wiskott-Aldrich Syndrome

### Cardiac Therapy

- Myocardial Infarction
- Angina
- Cardiomyopathy

### Auto Immune Diseases

- Diabetes Type 1
- Lupus
- Crohn's Disease

### Repair of the Nervous System

- Pediatric Brain Injuries:
  - Encephalopathy
  - Hypoxia
  - Cerebral Palsy
- Multiple Sclerosis (MS)
- Spinal Cord Injury

### Organ Repair

- Restoring vision by growing new cornea
- Restoring vision by treating macular degeneration

Source: [www.parentsguidecordblood.com](http://www.parentsguidecordblood.com)  
Visited July 28th, 2011 copy right Frances Verter

# Cord tissue stem cells

In addition to collecting and storing your baby's cord blood stem cells you can collect and store their cord tissue stem cells (Mesenchymal Stem Cells or MSCs).

True to our pioneering nature, Future Health Biobank was the first company in the UK to offer a valuable cord tissue preservation service.



# When can they be collected?

Umbilical cord tissue stem cells, like cord blood stem cells, can only be collected for processing and storage at birth.

Once that crucial time has passed, so has the opportunity for your child to benefit from these stem cells.

Immediately after the birth of your new baby, after the cord is clamped and cut, a 15cm section is removed, cleaned, and placed in the sterile collection tube provided. It's then delivered without delay to our laboratory for processing and preservation. The procedure is completely pain-free, non-invasive, fast, and even simpler to perform than collecting cord blood.

The cord tissue can then be stored for a period of at least 25 years, cared for by Future Health, until such time that your child or a family member needs the Mesenchymal Stem Cells from it.

# How can they benefit your child's future health?

Mesenchymal Stem Cells are no stranger to one of the most exciting and potentially far reaching areas of stem cell treatment - that of regenerative medicine.

Where cord blood stem cells are increasingly being used to treat conditions of the blood, the immune system and some forms of cancer such as leukaemia, Mesenchymal stem cells are the expert units of the body in repair and regeneration.

These could be used for:

- Bone regeneration<sup>10</sup>
- Myocardial infarction<sup>11,12</sup>
- Injury-related motor neuron repair<sup>13</sup>
- Tissue regeneration / engineering<sup>14</sup>
- Autoimmune diseases<sup>14</sup>
- Musculoskeletal<sup>15</sup>
- Hair regeneration<sup>16</sup>
- Wound healing<sup>17</sup>

# Facts and misconceptions

## Misconception:

The use of stem cells is purely experimental.

## Fact:

The first successful cord blood stem cell transplant took place in 1988. Since then more than 100 public Cord Blood Banks have collected over 500,000 Cord blood units (CBUs) from altruistic, free and anonymous donations that resulted in over 25,000 unrelated Cord Blood Transplantations worldwide<sup>18</sup>. The Eurocord registry has identified 596 patients transplanted with related Cord Blood from 1988 to 2010<sup>18</sup>. If current clinical trials are successful, directed cord blood banking may become standard medical practice.

## Misconception:

Cord blood stem cells may only be used by the person from whom they were collected.

## Fact:

Cord blood stem cells are 100% compatible with the child from whom they were collected and therefore may be used for an autologous transplant. The sample may also be used by the parents or siblings of the child since the chances of a compatible HLA match are higher if a relative's sample is used. When the stem cells are allogeneic (i.e. do not come from the individual who receives them) the first choice when it comes to looking for them would always be a sample from a family member of the patient, or a cord blood sample from a sibling. If a related/family donor is not found, then a search would be made in a public registry. This applies to malignant diseases for both adults and children, as well as immunodeficiency, metabolic diseases and marrow failures<sup>19</sup>. The allogeneic use of the sample is only allowed if the sample was processed and stored in a fully licensed bank such as Future Health, because we have a HTA licence. If a sample is stored in a bank that does not have a Human Tissue Bank licence then it can only be given back to the donor (autologous use only).

## Misconception:

There is no reason to save the stem cells because the chances of needing them are extremely low.

## Fact:

New data published in March 2008<sup>20</sup> indicates the probability of an individual in the United States needing a stem cell transplant, using either their own stem cells or those from a donor, is much higher than previously stated. This new research says that as many as 1 in 200 people will receive a stem cell transplant during their lifetime, based on current therapeutic use of haematopoietic stem cells.

# Why we believe Future Health Biobank is the leading company in cord blood and cord tissue storage

- We were the **first private cord blood stem cell bank in the UK.**
- We were the **first UK cord blood bank to receive full accreditation from the MHRA and HTA.**
- We are the **biggest private cord blood bank in the UK.** We process **more samples than all of the other UK cord blood banks combined.**
- Our UK laboratory has processed and **stored samples from over 51 countries across 4 continents** and we have **offices in 29 countries around the world.** All samples are processed and stored onsite at our Nottingham laboratory.
- We have a **healthy balance sheet** with no bank debts whatsoever making us **the best choice for the long-term storage** of your sample.
- Future Health are the only company in the UK to offer all of their clients the option of a **free initial consultation**, ensuring that all of your questions are answered at a time to suit you, in the comfort of your own home.
- We store your baby's cord blood and cord tissue cells as **two separate samples**, in **two separate tanks**, in **two separate storage areas.**
- We are the **most innovative bank** in the UK leading the way in the science of stem cells. We were the first to launch the cord tissue service and the first UK cord blood bank, to offer clients a range of services including, teeth, adipose tissue and immune system banking.
- **Future Health is the only bank in the world** to have ever received the prestigious **Queen's Award for Enterprise** and our **UK Director** has recently received an **MBE for services to science.**

## Other reasons why you should preserve your child's umbilical cord blood stem cells and cord tissue stem cells

- The compatibility of the cells is 100% guaranteed for your child - and probable for the rest of the family.
- The cells are immediately available. They're right here in the UK, and can be transported to any location in the world that you request.
- Finding a suitable bone marrow sample from a public bank could prove to be difficult - especially amongst cross-racial or older parent families.
- If your family has a genetic predisposition to cancer or other diseases, cord blood or tissue stem cells could be a vital resource.
- Medical science continues to find more uses for cord blood/tissue stem cells and a better future health for our children - and for the next generation.

# Our experience

For over nine years, Future Health Biobank has been a global leader in the collection and storage of human blood and tissue for the treatment of a wide variety of diseases. Our knowledge and expertise are second to none. For instance:

- We were the first private cord blood bank in the UK to receive a full accreditation as a human tissue bank, awarded in 2004 by the UK's Medicines & Healthcare products Regulatory Agency (MHRA).
- We have an MHRA Blood Establishment Authorisation (BEA).
- We also hold an ISO9001 certificate for our quality management system.
- We hold a Tissue Bank Licence from the Human Tissue Authority (HTA).
- We are the UK's first and longest established MHRA Accredited and HTA Licensed private stem cell bank.
- We are the first private cord blood storage company to receive the Queen's Award for Enterprise.

## Our advanced laboratories and facilities

- We use the very latest processing and cryopreservation equipment and operate under the very highest security and monitoring protocols.
- Our laboratories strictly adhere to the Blood Safety and Quality Regulations 2005, the guidance on the Microbiological Safety of Human Organs, the guidance on Tissues and Cells used in Transplantation and current Good Manufacturing Practice (cGMP). We also adhere to all relevant EU directives.
- We are based in Nottingham, UK, where we have our own purpose-built laboratories, on-site storage facility and administrative offices.
- We have experience in 51 different countries across 4 continents, with our umbilical cord blood and tissue banking.
- Our security is in force 24/7, 365 days a year and our storage temperature is controlled and monitored on a 24-hour a day basis.
- Our contingency plan allows all of our cryopreservation tanks to be relocated to another HTA facility temporarily, if necessary.
- Our Advisory Board includes some of the most highly qualified and respected experts in the field of Immunogenetics, Transplantation Biology, Disease Mechanisms, Cell Biology, Chemical Pathology, Haematology, Gynaecology, and Metabolic Medicines.

# Other ways we can help your future health

Banking cord blood and cord tissue stem cells from your child isn't the only way that Future Health Biobank can help your family's future health. In fact we have a whole family of services designed for the collection and preservation of:



Banking the stem cells in your children's milk teeth and your 'adult' teeth to help treat diseases like diabetes and heart disease.



Collecting and saving stem cells in your fatty tissue to help with cosmetic procedures and regenerative treatments as you get older.

## So what should you do now?

If you have any further questions please call our Customer Careline on Freephone **0800 954 5335** or email us at **[info@fhbb.com](mailto:info@fhbb.com)**.

Once you have decided that you wish for Future Health to store your child's stem cells, please contact us well in advance of your child's expected date of birth in order to receive your cord blood / cord tissue collection kit.

**We look forward to hearing from you.**

**References:** **1.** Smith, S., and H.E. Broxmeyer. The influence of oxygen tension on the long-term growth in vitro of haematopoietic progenitor cells from human cord blood. *Br. J. Haematology*. 1986. 63:29-34. **2.** Nakahata T, Ogawa M: Identification in culture of a new class of haematopoietic colonyforming units with extensive capability to self renew and generate multipotent haematopoietic colonies. *Proc Nat'l Acad Sci USA* 79: 1982. 3843-3847. **3.** Harris DT, Badowski M, Ahmad N, Gaballa MA. The potential of cord blood stem cells for use in regenerative medicine. *Expert Opinion on Biological Therapy*. 2007; 7(9): 1311-22. **4.** MA N, Stamm C, Kaminski A, Li W, et al. Human cord blood cells induce angiogenesis following myocardial infarction in NOD/scid-mice. *Cardiovascular Research*. 2005; 66(1); 45-54. **5.** Ma N, Ladirlov Y, Kaminski A, Piechaczek C, Stamm C. Umbilical cord blood cell transplantation for myocardial regeneration. *Transplant proc*. 2005; 38(3): 771-3. **6.** Nishiyama N, Miyoshi S, Hida N, et al. The significant cardiomyogenic potential of human umbilical cord blood-derived mesenchymal stem cells in vitro. *Stem Cells*. 2007; 25(8): 2017-24. **7.** Antonio Maria Leone et al. *European Heart Journal*, Feb 2005. **8.** Leor J et al. Human umbilical cord blood cells: a new alternative for myocardial repair?, *Cytotherapy* 2005; 7: 251-7. **9.** Smukler S, Seaberg R, Prof D van der Kooy. 22nd Aug 2004 online edition of *Nature Biotechnology* Diabetes. **10.** Arufe M C et al. Analysis of the chondrogenic potential and secretome of mesenchymal stem cells derived from human umbilical cord stroma. *Stem Cells Dev*. 2010 Dec 29. (Epub ahead of print). **11.** Nishiyama N et al. The significant cardiomyogenic potential of human umbilical cord blood-derived mesenchymal stem cells in vitro. *Stem Cells*. 2007 Aug; 25(8): 2017-24. Epub 2007 May 10. **12.** Nietfeld JJ, Pasquini MC, Logan BR, Verter F, Horowitz MM. Lifetime probabilities of hematopoietic stem cell transplantation in the U.S. *Biol Blood Marrow Transplant*. Mar 2008;14(3):316-322. **13.** Cao FJ et al. Human umbilical cord mesenchymal stem cells and the treatment of spinal cord injury. *Chin Med J (Engl)*. 2009 Jan 20; 122(2): 225-31. **14.** Malgieri A et al. Bone marrow and umbilical cord blood human mesenchymal stem cells: state of the art. *Int J Clin Exp Med*. 2010 Sep 7; 3(4): 248-69. **15.** Wang L et al. Musculoskeletal tissue engineering with human umbilical cord mesenchymal stromal cells. *Regen Med*. 2011 Jan; 6(1): 95-109. **16.** Yoo BY et al. Application of mesenchymal stem cells derived from bone marrow and umbilical cord in human hair multiplication. *J Dermatol Sci*. 2010 Nov; 60(2): 74-83. Epub 2010 Sep 16. **17.** Luo G et al. Promotion of cutaneous wound healing by local application of mesenchymal stem cells derived from human umbilical cord blood. *Wound Repair Regen*. 2010 Sep-Oct; 18(5): 506-13. doi: 10.1111/j. 1524-475X.2010.00616.x. **18.** Family-directed umbilical cord blood banking by Eliane Gluckman, Annalisa Ruggeri, Vanderson Rocha, Etienne Baudoux, Michael Boo, Joanne Kurtzberg, Kathy Welte, Cristina Navarrete, and Suzanna M. van Walraven *Haematologica* 2011. 96:pages1-20. **19.** B E Shaw et al. Recommendations for a standard UK approach to incorporating umbilical cord blood into clinical transplantation practice: conditioning protocols and donor selection algorithms. *Bone Marrow Transplantation* (2009) 44, 7-12; doi:10.1038/btm.2008.420; published online 12 January 2009. **20.** Wiley JM & Kuller JA: Storage of newborn stem cells for future use. *Obstetrics and Gynaecology* Vol. 89, No 2. February 1997.



Future Health Biobank, 10, Faraday Building, Nottingham Science & Technology Park, University Boulevard, Nottingham NG7 2QP. United Kingdom  
 Telephone: + 44 115 967 77 07 Fax: + 44 115 967 78 36 Email: [info@fhbb.com](mailto:info@fhbb.com) Web: [www.futurehealthbiobank.co.uk](http://www.futurehealthbiobank.co.uk)

