Year 2004 - Eighth Issue. Mita (P) 119/11/2002 • A Newsletter from CordLife

THE GUARDIAN

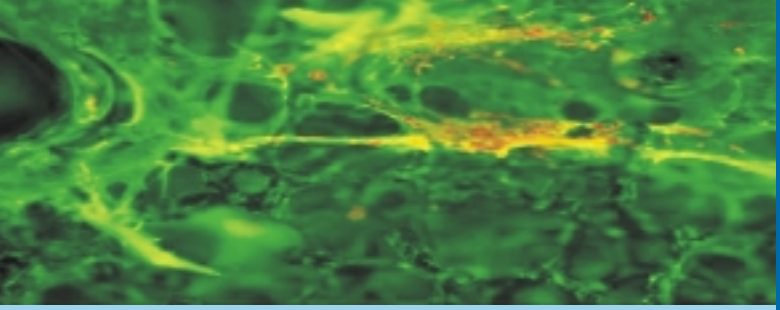
CordLife Secures US Department of Defense Contract

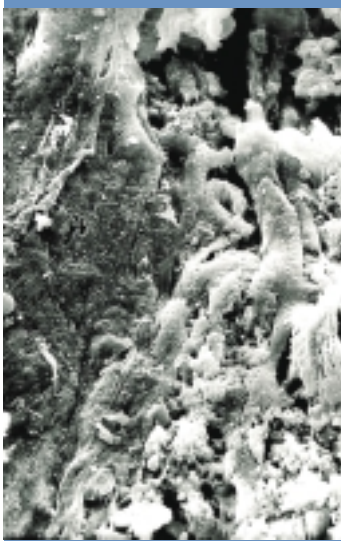
CordLife announced that its Boston-based subsidiary, Cytomatrix LLC, had secured a contract with the Department of Defense (DOD) of the United States. Worth up to S$2.9 million (US$1.7 million), the contract took effect in December 2003 and is expected to run to December 2005.

The contract makes use of the company's patented T cell production technology, in which its three-dimensional cell growth scaffold is configured to produce T cells from stem cells outside the human body for the first time. This unique system will be utilised by the DOD to screen vaccine prototypes under development. By employing this system, researchers will be able to indicate how the human immune system will respond to proposed vaccines, thus determining which are most likely to be effective.

This approach to vaccine screening is expected to reduce both the cost and the time taken to bring vaccines to market. In particular, this vaccine screening system could reduce or eliminate the use of animals in the early stages of vaccine testing, as well as often laborious assays using donated human samples. The development of a standardised, in vitro cellular assay for assessing vaccine efficacy, such as CordLife's artificial T cell system, could result in savings of years of effort and millions of dollars.

continue >





"To the best of our knowledge, this is the first time such an approach is being used anywhere in the world," said Dr. Mark Pykett, President, Cytomatrix. "It is a recognition of the enormous and growing possibilities of our technology. The deployment of the Cytomatrix® in another commercial setting further demonstrates our technology's potential and bodes well for this company as we develop more applications for use by companies around the world."

The two black and white pictures are scanning electron micrographs at high resolution. These show a strut of the Cytomatrix completely coated with stromal cells creating the artificial thymus. The stromal cells are aligned in parallel lines and sheets which are indicative of the extensive organization of the organoid.

The color picture is a light microscopy photograph also showing the artificial thymus where the fibroblast stromal cells are coded with a green fluorescent marker, regulatory immune cells are coded with a red marker, and the Cytomatrix appears in black.

Robert Speaks...

I am pleased to inform you that we are present in Indonesia in two cities: Jakarta and Medan. Although the processing and storage are still done in Singapore, we have been collecting and shipping umbilical cord blood samples from Jakarta, Medan and Bandung. We will be coming to more cities in Indonesia in the near future.

We are very excited about introducing umbilical cord blood stem cell technology to Indonesia, to give Indonesian parents the same benefits and security as we have been giving to Singaporean parents.

We are facing many challenges in introducing this service to Indonesia. Most people have not heard about us and about umbilical cord blood banking. To overcome this, we are actively organizing educational seminars for the medical community, in conjunction with some of the major hospitals in Jakarta and Medan. Regular educational seminars for expectant parents and the general public are in the pipeline.
We also participated in the Singapore Roars Road Show organized by Singapore Tourism Board in October 2003 and plan to participate in other relevant exhibitions and expos in Indonesia.

We have also been featured in several local magazines, such as Parents' Guide, Gatra, Intisari and Farmakosindo. Definitely the interest in cord blood banking and stem cells is growing in this country. Look out for more stories to come in 2004!

We look forward to giving your friends and families in Indonesia the same high quality service as we have been giving you in Singapore.

Robert Dharmasaputra
Business Development Manager, Indonesia

The American Association of Blood Banks

Established in 1947, the American Association of Blood Banks (AABB) is an international association of blood banks, hospital and community blood centres, transfusion and transplantation services and individuals involved in activities related to transfusion and transplantation medicine.

AABB member facilities are responsible for collecting virtually all of the US's blood supply and transfusing more than 80 %. More than 2,200 institutions and 8,500 individuals are members of the AABB. Members are located in all 50 states of US and 80 foreign countries.

It is AABB's mission to establish and promote the highest standard of care for patients and donors in all aspects of blood banking; transfusion medicine; haematopoietic, cellular and gene therapies; and tissue transplantation. These standards are internationally recognised as the highest in the world. These standards, along with the requirements specified in the Accreditation Information Manual of AABB, provide the basis for the AABB Accreditation Program. By 1991, these standards were extended to cover the collection, processing and transplantation of marrow, peripheral blood and umbilical cord blood progenitor cells.

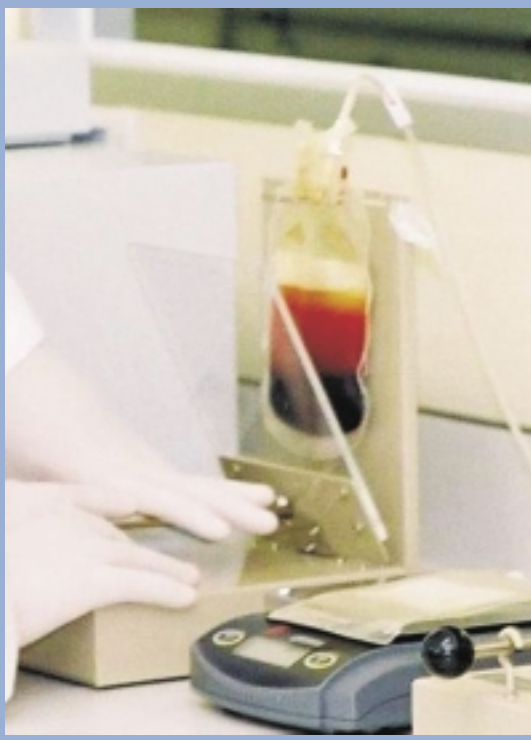
The AABB's accreditation program strives to improve the quality and safety of collecting, processing, testing, distributing and administering

blood and blood products. The Accreditation Program assesses the quality and operational systems in place within the facility. This independent assessment of a facility's operations helps the facility to prepare for other inspections and serves as a valuable tool to improve both compliance and operations. Accreditation is granted for collection, processing, testing, distribution, and administration of blood and blood components; haematopoietic progenitor cell activities; cord blood activities; perioperative activities; parentage testing activities; immunohaematology reference laboratories and training facilities.

When CordLife's processing and storage facilities were set up in 2002, our facilities were licenced by the Singapore Ministry of Health, according to AABB guidelines. Compliant to these guidelines since early 2002, CordLife has been actively working towards full AABB accreditation, one of the very few private companies in Asia to do so. Achieving AABB accreditation is a long and stringent process. It is a process that CordLife has committed itself to from its earliest days, to ensure the stem cell samples in our care are processed and stored to the highest standards.

Dr. Quratulain Zaidi
Quality Director
CordLife

Further information on the AABB can be obtained from their website, www.aabb.org, or from their newsletter, AABB News.



Diseases That Can Be Treated By

Adapted with kind permission from A Parent's Guide to Cord Blood Banks and the Umbilical Cord Blood Education Alliance. Please visit http://www.parentsguidecordblood.com and www.cordbloodeducation.org.

Standard Therapies

These are diseases for which stem cell transplants are a standard treatment. For some diseases they are the only therapy, and in other diseases they are only employed when front-line therapies have failed or the disease is very aggressive.

Leukemias

Leukemia is a cancer of the blood immune system, whose cells are called leukocytes or white cells.

- Acute Lymphoblastic Leukemia (ALL)
- Acute Myelogenous Leukemia (AML)
- Acute Biphenotypic Leukemia
- Acute Undifferentiated Leukemia
- Chronic Myelogenous Leukemia (CML)
- Chronic Lymphocytic Leukemia (CLL)
- Juvenile Chronic Myelogenous Leukemia (JCML)
- Juvenile Myelomonocytic Leukemia (JMML)

Myelodysplastic Syndromes

- Myelodysplasia is sometimes called pre-leukemia.
- Refractory Anemia (RA)
- Refractory Anemia with Ringed Sideroblasts (RARS)
- Refractory Anemia with Excess Blasts (RAEB)
- Refractory Anemia with Excess Blasts in Transformation (RAEB-T)
- Chronic Myelomonocytic Leukemia (CMML)

Lymphomas

- Lymphoma is a cancer of the leukocytes that circulate in the blood and lymph vessels.
- Hodgkin's Lymphoma
- Non-Hodgkin's Lymphoma
- Burkitt's Lymphoma

Inherited Red Cell (Erythrocyte) Abnormalities

Red cells contain hemoglobin and carry oxygen to the body.

- Beta Thalassemia Major (also known as Cooley's Anemia)
- Blackfan-Diamond Anemia
- Pure Red Cell Aplasia
- Sickle Cell Disease

Other Disorders of Blood Cell Proliferation

Anemias

Anemias are deficiencies or malformations of red cells.

- severe Aplastic Anemia
- Congenital Dyserythropoietic Anemia
- Fanconi Anemia (Note: the first cord blood transplant in 1988 was for this disease)
- Paroxysmal Nocturnal Hemoglobinuria (PNH)
- Pure Red Cell Aplasia

Inherited Platelet Abnormalities

Platelets are small blood cells needed for clotting.

- 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 – Neutropenias

- Kostmann Syndrome
- Myelokathexis

Inherited Immune System Disorders – Other

- Ataxia-Telangiectasia
- Bare Lymphocyte Syndrome
- Common Variable Immunodeficiency
- DiGeorge Syndrome
- Leukocyte Adhesion Deficiency
- Lymphoproliferative Disorders (LPD)
- Lymphoproliferative Disorder, X-linked (also known as Epstein-Barr Virus Susceptibility)
- Wiskott-Aldrich Syndrome

Phagocyte Disorders

Phagocytes are immune system cells that can engulf and kill foreign organisms.

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

Cancers in the bone marrow (Plasma Cell Disorders)

- Multiple Myeloma
- Plasma Cell Leukemia
- Waldenstrom's Macroglobulinemia

Other cancers (Not originating in the blood system)

- Neuroblastoma

Stem Cell Transplants

Therapies in Clinical Trials

These are diseases for which stem cell treatments have been shown beneficial, but are not a standard therapy, and are therefore still undergoing trials.

Transplants for Cancerous Tumors
- Breast Cancer
- Ewing's sarcoma
- Renal cell carcinoma

Transplants for Inherited Disorders affecting the Immune System & Other Organs
- 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)
- Mucolipidosis II (I-cell Disease)

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

Lysosomal Storage Diseases
- Gaucher Disease
- Niemann-Pick Disease
- Wolman Disease

Inherited Disorders - Other
- Lesch-Nyhan Syndrome
- Osteopetrosis

Transplants for Disorders of Cell Proliferation
- Familial Erythrophagocytic Lymphohistiocytosis
- Hemophagocytosis
- Langerhans Cell Histiocytosis (LCH; formerly called Histiocytosis-X)

Transplants for diseases of the Central Nervous System
- Multiple Sclerosis (MS)

Gene Therapy (ie: Transplanting genetically altered stem cells)
- Glanzmann Thrombasthenia
- Severe Combined Immunodeficiency (SCID) with Adenosine Deaminase Deficiency (ADA-SCID)
- SCID which is X-linked

Cellular Cardiomyoplasty (ie: Strengthening damaged heart muscle by infusing stem cells or promoting their growth)

Phase I Clinical Trials / Experimental Treatments

In a "Phase I" clinical trial, the purpose of the study is to find out if the therapy makes any difference in the course of the disease, as compared to a control group. This category also covers experiments in the laboratory, either with cell cultures or animals.

Auto-Immune Diseases
- Diabetes, Type I
- Evan Syndrome
- Juvenile Dermatomyositis
- Rheumatoid Arthritis
- Systemic Lupus Erythematosus

Gene Therapy (Transplanting genetically altered stem cells)
- Metabolic Disorders (Leukodystrophy Diseases, Storage Disorders, etc.)
- Parkinson's Disease

Nerve cell repair
- Diseases of the Central Nervous System
- Amyotrophic Lateral Sclerosis (ALS, or "Lou Gehrig's disease")
- Alzheimer's Disease
- Huntington's Disease
- Parkinson's Disease

Traumatic injury
- Spinal cord injury
- Stroke recovery

Organ repair
- Kidney
- Liver

A Scientific Review of Current Application of Stem Cell Transplantation in Oncology

Ho Choon Hou, MBchB(Hons), MRCS(Edin), MMED(Surg)
Toh Keng Kiat, MBBS, MRCP(UK), FRCP(Edin), FRCP (Glas), FRCP(London)

Current research into clinical application of stem cells is an ongoing race to realize the huge potential that such cells offer in medical treatment. This paper aims to assess the present status of stem cell transplantation in oncology using haemopoietic stem cells (HSCs) harvested from the umbilical cord or peripheral blood.

Chemotherapy and radiotherapy are used either primarily to treat haematological malignancies or as adjuvants to surgical clearance of solid tumours to eradicate residual malignant cells. Many radiochemosensitive cancers have a dose-response effect, whereby a doubling of dose can increase tumour cell kill manifold.

Such dose intensive treatment while achieving improvement in response rates or even cures in some cancers also risk concomitant increase in treatment-induced morbidity and mortality. These are due to destruction of haematopoiesis and lymphopoiesis from the intensive wide or multiple field irradiation and high-dose chemotherapy. Patients in these situations can be "rescued" by allogenic or autologous stem cell transplantation.

Stem cell transplantation is still in its infancy. The number of patients benefiting from this transplantation is limited by the availability of HLA-matched donors as well as cost of the therapy. It is estimated that a myeloablative stem cell transplant from an allogenic source would approximately cost US$150,000.

Even with its limited applications now, the demand for stem cell transplantations outstrips the supply of suitable donors.
With the increasing proof that stem cell rescue enables a better tumour response to chemotherapeutic and radiological curative attempts, stem cells transplantation may become mainstream in clinical oncology for both haematological and some solid tumours.

About the Authors

Dr Ho is a Surgical Registrar with the Department of Surgery at Tan Tock Seng Hospital, Singapore, with specific interest in stem cells applications.
Dr Toh is a Consultant Haematologist at Camden Medical Centre and Visiting Consultant at Singapore General Hospital, Singapore.

Adapted from CH Ho and KK Toh. Medical Progress 2003;30(12):41-45

Banking On Cells –

An Introduction to Stem Cells

Due to the increasing interest in stem cells and umbilical cord blood banking, CordLife has increased the frequency of its educational talks. During these talks, trained scientists will explain more on stem cells, their applications and the latest developments in this promising area.

Do contact Grace to let us know you'll be joining us. Call us at **6238 0808**, or email us at **gchan@cordlife.com**

The schedule of upcoming talks:

	Saturdays	Wednesdays
Date	3 Apr 8 May 5 Jun 3 Jul 7 Aug 4 Sep 2 Oct 6 Nov 4 Dec	21 Apr 19 May 16 Jun 21 Jul 18 Aug 15 Sep 20 Oct 17 Nov 15 Dec
Time	10.30am – 12 noon	6.30pm – 8 pm

If you have a friend who maybe interested in CordLife services, we would be more than happy to see them. Please contact us at **referafriend@cordlife.com**

Should you wish to be removed from The Guardian mail distribution list, or to inform us of any change in contact address, please contact Grace (**gchan@cordlife.com**).

Your Baby & Sleep

About 20% of all babies up to 4 years of age encounter sleeping patterns that may disturb or worry their parents. Parents shouldn't worry too much.

Very often, a baby does not know how to differentiate between day and night. Some babies can sleep more during the day than at night; some may sleep peacefully, while others may make noises in their sleep. And some babies just sleep more than others!

Having a baby with different sleeping patterns from the parents can be tiring, especially for the mother. Therefore, mothers should try to rest as much as possible when the baby is asleep. Newborns normally may need a couple of feeds through the night during the first few months.

A pillow is not necessary as it may cause suffocation. You may put the baby on its back. However, putting a baby on its side is recommended for newborns. This is to prevent the baby from choking should it vomit.

Setting a routine before bedtime helps the baby to settle down more easily. You can help the baby to relax by singing, and by rocking it gently or massaging him before settling him to sleep.

Article contributed courtesy of Thomson Medical Centre (TMC). TMC runs post-natal services regularly. Please call 6251 4090 or 6251 4043 for more information during working hours.

cordlife

About CordLife

CordLife Pte Ltd is a leading stem cell biotechnology company. It operates American Association of Blood Banks (AABB) compliant umbilical cord blood and peripheral blood stem cell banking services in the Asian region. From its Singapore headquarters, and from its Cytomatrix R&D Division in Boston USA, the company engages in cutting edge adult stem cell research in conjunction with leading institutions.

One of the company's core technologies is a unique cell growth platform called, "The Cytomatrix®", a platform that enables cells to grow in three dimensions. Utilising this platform, the company is working on stem cell expansion, and provides R&D products to researchers around the world. For further information, please visit www.cordlife.com, or www.cytomatrix.com.

Contact Us!

Should you wish to contribute any articles, comments or pictures to The Guardian, please contact our editor, Ronald Hee at **rhee@cordlife.com**

Corporate Office
600, North Bridge Road
Parkview Square, #12-09/10
Singapore 188778
Main line: 6238 0808
Fax: 6295 1108 Support line: 6238 1828

Laboratory
1 Orchard Boulevard
#08-08 Camden Medical Centre
Singapore 248649
Main line: 6238 0820
Fax: 6238 1108

Main Line: (65) 6238 0808 Fax: (65) 6238 1108
URL: www.cordlife.com
Email: Info@cordlife.com
Clients/Doctors Support Line: (65) 6238 1828

Designed by Purple Circle Design Pte Ltd
Printed by Print Dynamics (S) Pte Ltd Licence No: L002/06/2002