



**ACTO-AsiaCORD**

**Cooperation Symposium 2023**

***In ACTO Annual meeting***

**Date:** November 8, 2023, 13:00 - 15:00

**Venue:** Room 2 (Hall 1/2), Centennial Hall, Kyushu University School of Medicine, FUKUOKA

ACTO-AsiaCORD

Cooperation Symposium 2023

Theme: Present and Future of Cord Blood and Perinatal Tissue Bank

**Date:** November 8, 2023, 13:00 - 15:00

**Venue:** ROOM 2 (Hall 1/2), Centennial Hall, Kyushu University School of Medicine, FUKUOKA, JAPAN

**Chairpersons:**

Kaiyan Liu, MD. PhD. (Peking University People's Hospital / Beijing Cord Blood Bank)

Tokiko Nagamura-Inoue, MD. PhD. (IMSUT CORD, The Institute of Medical Science, The University of Tokyo)

**Title and speakers**

**1. AsiaCORD Mission and Future Direction**

Kaiyan Liu MD. PhD.

AsiaCORD President, Beijing Cord Blood Bank

**2. Current Status and Issues of Cord Blood Banking in Japan**

Fumihiko Ishimaru, MD, PhD, Medical Director

Japanese Red Cross Cord Blood Bank

**3. Umbilical Cord Blood Transplantation be a Game Changer with the Stem Cell Expansion System?**

Satoshi Yamazaki, PhD, Professor

Division of Cell Regulation, Center of Experimental Medicine and Systems Biology, The Institute of Medical Science, The University of Tokyo, Japan

**4. Panel Discussion with Cord Blood banks in Asia**

## 1. AsiaCORD Mission and Future Direction

### Kaiyan Liu MD. PhD.



AsiaCORD President,  
Director of Beijing Cord Blood Bank  
Professor of Internal Medicine, Peking University People's Hospital  
Director of Peking University People's Hospital Ethics Committee  
Executive Vice-president of Beijing Lu Daopei Hospital

#### Abstract

Since the first successful cord blood transplant treating a Fanconi Anemia in 1988, cord blood transplant has become proven therapy treating more than 80+ blood and immune diseases. It also shows great potential in regenerative medicine and as cell resource for immunotherapy. AsiaCORD was founded on November 1999 in Bangkok aimed to spread clinical cord blood banking, promote transplantation and other scientific application of cord blood. Based on the prosperous trend of cord blood development, AsiaCORD will continue to provide a platform to further promote the academic exchange and researches of Cord Blood in Asia area and across the world.

#### Short Biography

Kaiyan LIU MD, PhD is a physician and scientist in hematology and cell therapy. He involved in the establishment of Cord Blood Banks in China and also a member of advisory board setting up the standard for cord blood processing, storage and distribution in both China and Asia. He has been focusing on promoting further application of Cord Blood in hemopoietic stem cell transplantation and as a resource of cells for immunotherapy.

As AsiaCORD president, he endeavors to promote the application and development of Cord Blood, and to encourage academic exchange and scientific research in Asia countries

#### References:

- 1) Xing-Yu Cao, Jing-Jing Li, Pei-Hua Lu, Kai-Yan Liu. Efficacy and safety of CD19 CAR-T cell therapy for acute lymphoblastic leukemia patients relapsed after allogeneic hematopoietic stem cell transplantation. *Int J Hematol.* 2022;116,315.
- 2) Kaiyan Liu , Depei Wu , Junmin Li , et al. Pharmacokinetics and Safety of Posaconazole Tablet Formulation in Chinese Participants at High Risk for Invasive Fungal Infection. *Adv Ther.* 2020;37:2493-2506.
- 3) Shu-Juan Wang, Wen-Yi Lu, Kai-Yan Liu. Adiponectin receptor agonist AdipoRon suppresses adipogenesis in C3H10T1/2 cells through the adenosine monophosphate-activated protein kinase signaling pathway. *Mol Med Rep.* 2017, 16,7163.
- 4) Yu-hong Chen , Kai-yan Liu. Current status of cord blood transplantation in China. *Chin Med J (Engl).* 2013,126,4594.
- 5) Kaiyan Liu , Yuhong Chen, Yang Zeng et al. Coinfusion of mesenchymal stromal cells facilitates platelet recovery without increasing leukemia recurrence in haploidentical hematopoietic stem cell transplantation: a randomized, controlled clinical study. *Stem Cells Dev.* 2011,20,1679.
- 6) Kaiyan Liu, Y-H Chen, D-H Liu, et al. A pilot study of low-dose recombinant interleukin-2 for acute lymphoblastic malignancy after unmanipulated allogeneic blood and marrow transplantation. *Bone Marrow Transplant.* 2008, 42,535.
- 7) Kaiyan Liu , K Akashi, M Harada, et al. Kinetics of circulating haematopoietic progenitors during chemotherapy-induced mobilization with or without granulocyte colony-stimulating factor. *Br J Haematol.* 1993,84,31.

## 2. Current Status and Issues of Cord Blood Banking in Japan

## **Fumihiko Ishimaru, MD, PhD**

Medical Director, Japanese Red Cross Cord Blood Bank



### **Abstract**

In Japan, more than 3,500 allogeneic hematopoietic stem cell transplants are performed every year, and cord blood transplants account for one-third of these transplants, which are extensively performed in the adult setting. Although haploidentical transplantation has become more popular in recent years, cord blood transplantation shows no signs of decline in Japan, with the total number of cord blood transplants exceeding 20,000 cases.

In Japan, there are six cord blood banks, four operated by the Japanese Red Cross Society and two by non-profit organizations, respectively. Although more than 2,000 new cord blood units are released each year, the increase in the number of banked cord blood units has remained slow, hovering at just under 10,000. This is a sign that cord blood transplantation is thriving, with 75% of newly released cord blood being used for transplantation within one year and 98% within five years. Traditionally, cord blood has been selected based on the number of nucleated cells, but recently the number of CD34-positive cells has become a priority in cord blood selection.

In Japan, the birthrate is declining at a rate unparalleled in the world, and cord blood banking faces many challenges, some of which will be discussed in this paper.

### **Short Biography**

Fumihiko Ishimaru was a member of the Department of Hematology and Oncology at Okayama University, and later worked at the Japanese Red Cross Blood Center, where he was involved in cord blood banking. In hematopoietic stem cell transplantation, he was instrumental in setting up team medicine, which was beginning to become mainstream at the time, and established cooperation with related departments. In cord blood banking, he analyzed and reported on the weak point of cord blood transplantation: the engraftment rate.

In cord blood transplantation, there have been numerous reports on factors that affect engraftment. Traditionally, the number of nucleated cells and subsequently the number of CD34-positive cells have been considered important, and recently the influence of HLA matching has also been reported. However, although various factors are listed in the guidelines, there are no reports on the importance of each factor. In practice, the selection of cord blood is determined by the transplant center's policy, with some physicians focusing on the number of nucleated cells and others on the number of CD34-positive cells or HLA matching. Therefore, he introduced a scoring system commonly used in clinical practice and analyzed the results, and found that CD34-positive cell count was the most important, followed by CFU-GM.

### **References:**

Kondo G, Ishimaru F, et al. Cord blood index predicts engraftment and early non-relapse mortality in adult patients with single-unit cord blood transplantation. *Bone Marrow Transplant* 2021; 56: 2771-2778.

### 3. Umbilical Cord Blood Transplantation be a Game Changer with the Stem Cell Expansion System?

#### Satoshi Yamazaki, PhD, Professor

Professor, Division of Cell Regulation, Center of Experimental Medicine and Systems Biology,  
The Institute of Medical Science, The University of Tokyo, Japan



#### Abstract

The ex vivo expansion of human hematopoietic stem/progenitor cells (HSPCs) has important applications in both basic research and clinical transplantation therapy. Here, we report the establishment of a novel culture system that supports the long-term ex vivo expansion of human HSPCs, achieved through the complete replacement of cytokines and albumin by chemical agonists and a caprolactam-based polymer. A phosphoinositide 3-kinase activator in combination with a thrombopoietin receptor agonist and the pyrimidoindole derivative UM171 were sufficient to stimulate functional expansion of umbilical cord blood-derived HSCs. The optimized conditions expanded engraftable hematopoietic stem and progenitor cells by 50~fold during a 30-day ex vivo culture and also supported clonal expansion. We envision that this chemically-defined expansion culture system will help to advance clinical HSC therapies.

#### Short Biography

Yamazaki Ph.D. has been working on regulatory research in hematopoietic stem cells for over 20 years. He has published several papers, particularly focusing on the regulation of hematopoiesis in the bone marrow microenvironment. Recently, he has established an ex vivo expansion culture system for hematopoietic stem cells and is approaching research from basic research to clinical application. Furthermore, Yamazaki are actively working on applications for gene therapy.

#### References:

- 1) Sakurai M et al., Chemically defined cytokine-free expansion of human haematopoietic stem cells. *Nature*. 2023 Mar;615(7950):127-133.
- 2) Becker HJ., et al., Controlling genetic heterogeneity in gene-edited hematopoietic stem cells by single-cell expansion. *Cell Stem Cell*. 2023 Jul 6;30(7):987-1000.e8.
- 3) Wilkinson AC., Long-term ex vivo haematopoietic-stem-cell expansion allows nonconditioned transplantation. *Nature*. 2019. doi: 10.1038/s41586-019-1244.

#### **4. Panel Discussion with Cord Blood banks in Asia**

##### **Chairpersons:**

Kaiyan Liu, MD. PhD. (Beijing University/ Beijing Cord Blood Bank)

Tokiko Nagamura-Inoue, MD. PhD. (IMSUT CORD, The Institute of Medical Science, The University of Tokyo)

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