CORD BLOOD STEM CELLS
BIOLOGY AND CLINICAL APPLICATIONS


Eliane Gluckman

The European School of Haematology (ESH), located in the internationally renowned public teaching hospital, the *Hôpital Saint Louis* in Paris, is a non-profit interdisciplinary institution for continuing education that operates as a travelling school. Its president, Eliane Gluckman, MD, PhD, is a pioneer in the field of umbilical cord stem cell transplantation. She carried out the first cord blood transplantation in the world in 1988.

When babies are born, the umbilical cord is generally discarded. This is in part because pregnant women and many of their doctors are unaware that science has demonstrated that cord blood cells have immense therapeutic value. Today, they save many lives. Haemopoietic stem cells are an ethical alternative to embryonic stem cells for research because they can be easily and painlessly harvested from umbilical cord blood immediately after the mother has given birth. Recent progress has revealed umbilical cord blood as a unique, safe and ethical source of stem cells for therapeutic use in many clinical settings of socio-economic importance. Cord blood technology is evolving rapidly.

As a result of Eliane Gluckman's pioneering work, cord blood transplantations are increasingly used worldwide to treat malignant blood disorders. Professor Gluckman continues to inform the medical and lay community of the therapeutic importance of umbilical cord donations. In support of this objective, she founded EUROCORD, an association entirely devoted to cord blood biology and clinical applications.

This year marks the 20th anniversary of the first cord blood transplantation. Today more than 400,000 cord blood units for unrelated allogeneic use have been collected throughout the world in more than 107 cord blood banks and more than 20,000 patients have been treated by cord blood transplant for various haematological diseases.

Today, the scientific field of cord blood technology is highly competitive, attracting strong human and financial investment. Over 300 participants from all over the world attended the recent conference on cord blood biology and transplantation that was held in Mandelieu, France under the auspices of the European organizations ESH, EUROCORD and NETCORD International. All the scientific pioneers of this new, important approach to the treatment of many life-threatening diseases were present at the meeting.

Among these pioneers was Matthew Farrow, the recipient of the first cord blood transplant in 1988. Matthew is now 25 years old. He and his wife left their child back home in the States for a few days in order to be present in Mandelieu. Several other patients also attended the meeting. Among them was Guillaume, the first child to receive an unrelated cord blood transplant in the experimental cord blood bank at Hôpital Saint Louis, in Paris, in 1994. The presence of Matthew, Guillaume and their families underscored their support of cord blood transplantation and their wish to make it better known and more widely available. Their speeches at the conference opening ceremony were highly moving and motivating.

The European Commission recently awarded a grant to EUROCORD and ESH to develop a comprehensive on-line training tool in the field of umbilical cord blood biology. This project named EUROCORD-ED brings together many major European partners including NETCORD, the European network of cord blood banks, the European Group for Blood and Marrow Transplantation (EBMT), the European Hematology Association (EHA), cord blood banks in Milano, Madrid, Leiden and Athens, basic science research groups, and the companies Biostor Ireland, MacoPharma and Alcimed.

The EUROCORD-ED project aims to inform and educate all the vocational actors involved in the field: laboratory scientists, technicians, clinicians, transplant physicians, obstetricians, midwives and biotechnology companies involved in banking, research, and the clinical analysis of cord blood. EUROCORD-ED also aims to inform future parents, and to support health policy decision-makers.

In addition, the area has become rapidly highly regulated on a par with the pharmaceutical industry. Directive 2004/23/EC established stringent standards for the donation, procurement, testing, processing, preservation, storage and distribution of umbilical cord blood. Directive 2006/17/EC laid down additional technical requirements and Directive 2006/86/EC laid down traceability requirements, notification of serious adverse reactions and events and certain technical requirements for the coding, processing, preservation, storage and distribution of umbilical cord blood. All establishments involved in cord blood processing now need to be licensed and people need to be trained in the requirements of the Directives and Good Manufacturing Practice (GMP).

Training is important to ensure pan-European harmonization of knowledge and skills and to guarantee the uniform implementation of quality control standards and EU directives. This project will build on previous European Commission grants awarded to ESH and to EUROCORD related to training, mobility and quality control in the healthcare setting.

EUROCORD-ED aims to:

- **C**onnect and provide comprehensive, interdisciplinary training for the many actors involved in the field of cord blood technology
- **F**acilitate access to high-level training at a time, place and language convenient to the User
- **T**rain trainers and provide European academic institutions with training tools for use within their own institutions
- **I**mprove the understanding and implementation of ethical and regulatory issues, including the European Tissue Directive
- **S**pread best practice to all European centres through the dissemination of information on quality standards, quality control and accreditation procedures (JACIE/NETCORD, Good Manufacturing Practice)
- **P**romote the development of accredited continuing education
- **C**ontribute to pan-European harmonization of professional competence in the field of cord blood technology and transplantation
- **P**romote professional mobility in the field throughout the European Union and its Associate States
- **C**ontribute to accelerate translational research, in the interest of patients
- **S**upport the development of the European biotechnology industry
- **I**nform regional/national/European policy decision-makers
- **D**evelop a reliable source of information for the general public
- **I**mpact on the quality and international visibility of the European education and research areas.

EUROCORD-ED has life-long learning objectives. But further to this, the structure is a unique resource for advice for healthcare decision-makers at the national and pan-European levels.

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