EUROPE BIOBANK WEEK 2021

CRYOSTEM biocollection : a unique resource in Europe from Hematopoietic Stem Cell Transplantation (HSCT) patients

Authors : J.CANARD[1], C.FONTENILLE[1], E.ROBERT[1], JH.DALLE[2], R.PEFFAULT DE LATOUR[3], B.CALMELS[4]

1. CRYOSTEM, Marseille, France
2. Hôpital Robert Debré, AP-HP, Paris, France
3. Hôpital Saint-Louis, AP-HP, Paris, France
4. Centre de Thérapie Cellulaire, Institut Paoli-Calmettes, Marseille, France

INTRODUCTION

CRYOSTEM was founded in 2010 by the French government's "National Investment Program" and promoted by the Francophone Society for Stem Cell Transplantation and Cell Therapy (SFGM-TC) to set up a dedicated and harmonized biological resources collection in the field of HSCT complications, such as Graft-versus-Host Disease (GvHD). CRYOSTEM operates through the establishment of an efficient network covering the French territory.

AIM

HSCT is the only curative treatment for many patients with hematologic diseases, but complications are still unknown and exploration is needed. The goal of this collection is to speed up research by accelerating biomarkers discovery, developing adequate treatments and improving transplant patients' health care.

METHOD

Since 2012, CRYOSTEM has set up an extensive network including all the French transplant units (adult and pediatric) and 28 biological resource centers (BRCs).

CRYOSTEM network has been ISO 9001 certified since 2015, guaranteeing procedures harmonization, samples quality and homogeneity and users' satisfaction.

Patient sampling is scheduled before and after HSCT, depending on the occurrence or not of acute and/or chronic GvHD. Transplant units and BRCs are in charge of blood sampling and processing/storage respectively.

3 types of samples are processed from blood and stored according to standardized methods : viable cells in DMSO, dried cells pellets and plasma.

Samples and clinicals data are centralized in a dedicated web database, accessible by transplant units and BRC personnel, following training.

RESULTS

In 9 years, CRYOSTEM collection has been enriched according to a specific kinetic (Fig. 1) applicable by all the partners involved in CRYOSTEM network (Fig. 2).

Since the first inclusion in 2012, the collection has been constantly growing, reaching currently nearly 6,000 transplant patients and 2,500 donors, resulting in almost 201,800 aliquots available for research (Fig. 3). As a result, CRYOSTEM network has operated the first and unique standardized European collection of biological resources.

Considering financial issues and the current volume of the collection, its enrichment will be definitively stopped at the end of 2021.

Since 2015, CRYOSTEM has promoted its collection by granting 14 research projects, academic and industrial, with more than 8,000 samples. To date, 5 major publications have emerged based on CRYOSTEM samples use.

In 9 years, CRYOSTEM has acquired a real know-how in network biobanking based on practices harmonization, samples quality and homogeneity.

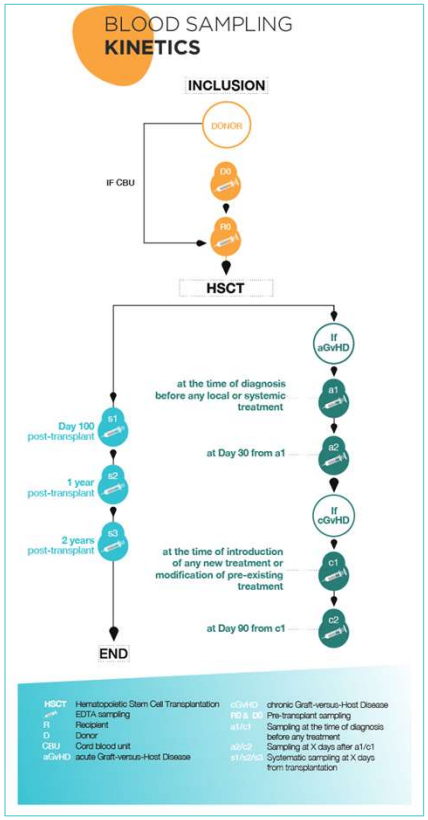

Fig. 1 : CRYOSTEM blood sampling

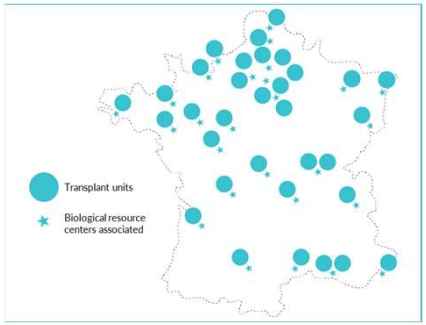

Fig. 2 : CRYOSTEM national network

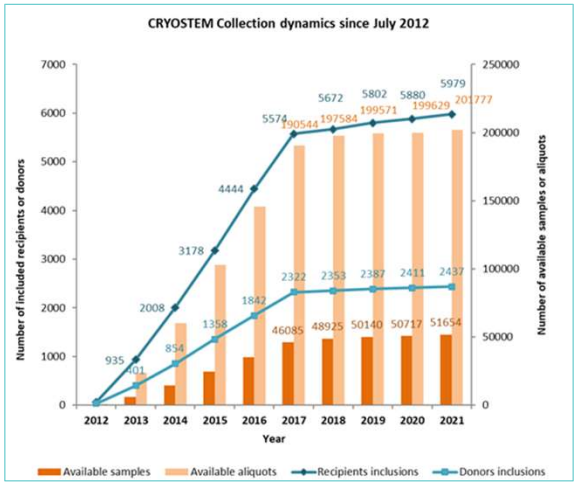

Fig. 3 : CRYOSTEM Collection dynamics since July 2012
(as of September 30, 2021)

CONCLUSIONS

Thanks to its unique network in Europe, CRYOSTEM provides the national and international scientific community with high-quality biological resources to improve HSCT medical knowledge and patient care.

Currently, and since 2018, CRYOSTEM has taken advantage of its network biobanking expertise by sustaining the translational research in HSCT-related fields. Indeed, CRYOSTEM network enables the implementation of prospective biological resources collections answering specific scientific issues.

REFERENCES

Tourret et al. *Journal for Immunotherapy of Cancer. 2021.* doi: https://doi.org/10.1101/2021.04.29.21256184

Piperoglou et al. *Journal of Leukocyte Biology. 2021; 1-12.* doi: 10.1002/JLB.5A1019-522RR

Latis et al. *Blood Advances. 2020; 4:16.* doi: 10.1182/bloodadvances.2019001032

Michonneau et al. *Nature Communications. 2019; 10:5695.* doi : https://doi.org/10.1038/s41467-019-13498-3

Robert et al. *Open Journal of Bioresources.* 2020; 7: 4. doi: https://doi.org/10.5334/ojb.58

ACKNOWLEDGEMENTS

INVESTISSEMENTS D'AVENIR — INSTITUT NATIONAL DU CANCER — SFGM-TC Société Francophone de GREFFE DE MOELLE et de Thérapie Cellulaire

CONTACT INFORMATION

juliette.canard@cryostem.org
+334 91 11 88 53
Association CRYOSTEM
45 rue Frédéric Joliot-Curie – CS 10002
13382 Marseille, France