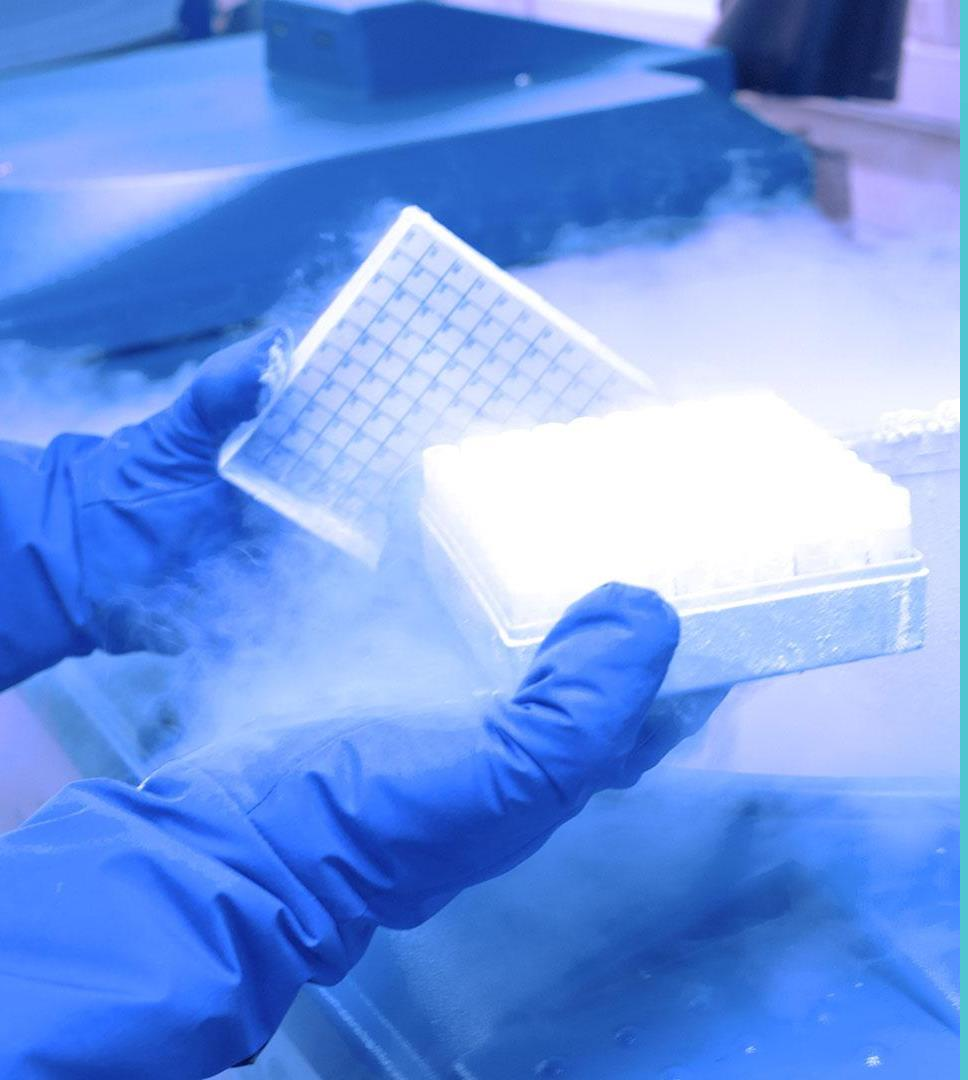


CRYOSTEM

BIOBANKING INITIATIVES : Biological and clinical follow-up for old and new cellular therapies

45th EBMT Annual Meeting, Frankfurt
Cell Therapy Day

Dr Emilie ROBERT
Strategy & Valorisation Manager

No disclosure to declare

Biobanking : a central puzzle piece for research & discovery

WHO ?	TOOL	WHICH AIMS ?
Consortia Researchers and Physicians Biotechs Medtechs Pharmas		Identification of predictive factors Biological mechanisms understanding Drug discovery Therapies evaluation in clinical trials ….

How could biobanks ensure at best the biological and clinical follow-up while the field of cellular therapies evolves quickly ?

CRYOSTEM

CRYOSTEM CASE STUDY :

A new biobanking model at the service of old and new cellular therapies

1

2011

CREATION OF A NATIONAL BIOBANK FOCUSED ON **HSCT COMPLICATIONS**

2

2018

CRYOSTEM EXPERTISE EXTENDED TO **HSCT FIELD**

3

2019

SHARING CRYOSTEM KNOW-HOW AND EXPERIENCE FOR **NEW CELLULAR THERAPIES**

CRYOSTEM

PROMOTED BY THE FRANCOPHONE SOCIETY FOR CELL TRANSPLANTATION AND CELL THERAPY

FUNDED BY THE FRENCH GOVERNEMENT AS PART OF THE *« NATIONAL INVESTMENTS PROGRAMME »*

1st AND UNIQUE COLLECTION OF BIOLOGICAL RESOURCES DEDICATED TO ALL HSCT COMPLICATIONS, INCLUDING GvHD

PRACTICES HARMONIZATION AND STANDARDIZATION
SAMPLES RELIABILITY AND QUALITY
SCIENTIFIC AND TECHNOLOGICAL INNOVATION

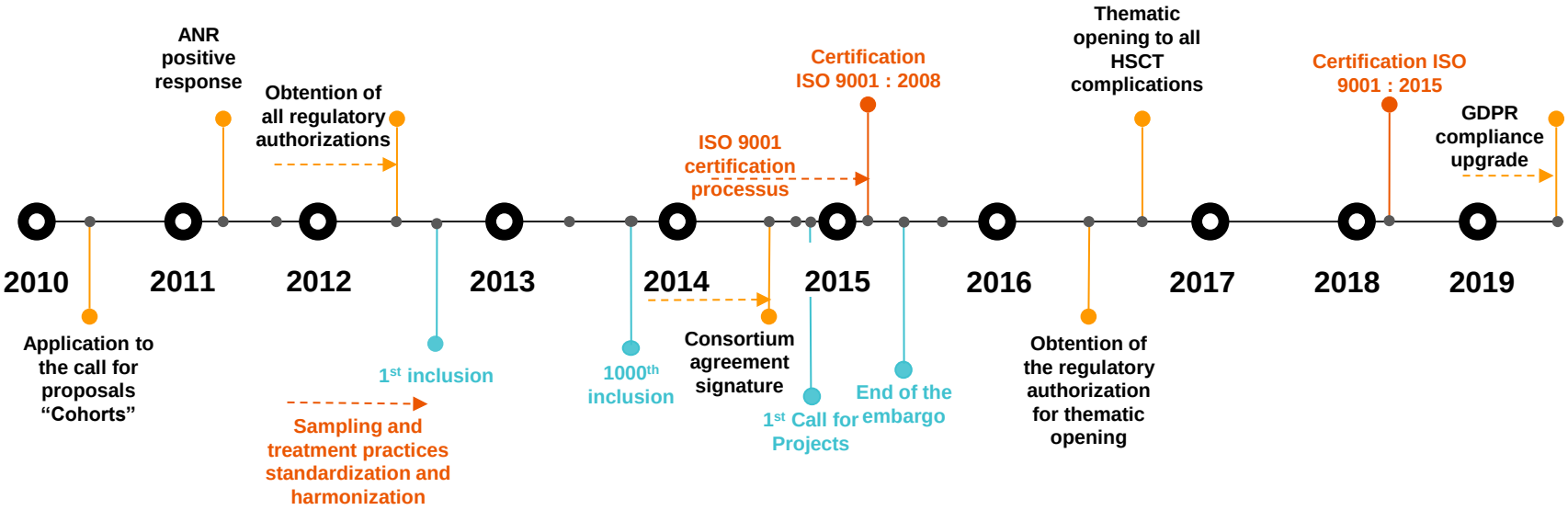
CRYOSTEM

1. CREATION OF A NATIONAL BIOBANK FOCUSED ON HSCT COMPLICATIONS

→ Implementation of a unique collection in Europe

Collection Dynamics

- ✓ Efficient implementation of CRYOSTEM biobank project
- ✓ Regulatory surveillance and compliance upgrade
- ✓ ISO 9001 certification of the Governance obtained in less than 1 year
- ✓ Practices harmonization & standardization



CRYOSTEM national network

THE COLLECTIVE STRENGTH

CRYOSTEM brings together **all the French actors of the HSCT field**

36
out of the 36 transplant units (TU)

28
Biological Resources Centres (BRC)

+400
Health professionals

→Strong partners commitment
→Close collaboration between each TU/BRC
→ **Almost 60% of the samples treated in less than 4 hours**

High inclusion and sampling rates

THE COLLECTION

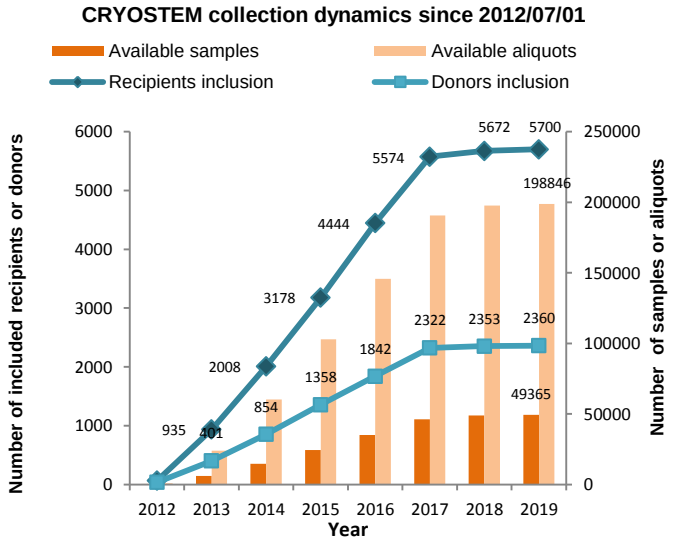
+5,700 patients
(adult and pediatric)
+2,300 donors
+17,000 blood samples

Nearly
200,000
available samples

82 %*

Inclusion rate of allotransplanted patients within CRYOSTEM transplant units

*figures 2017 of Agence de la Biomédecine

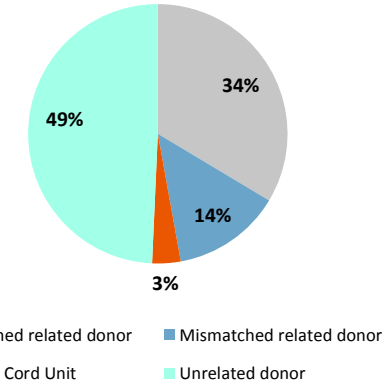


→ Inclusion rate : **100 patients/month**
→ **≈ 95% of patient consents collected**

Sampling kinetics designed for retrospective studies on HSCT complications

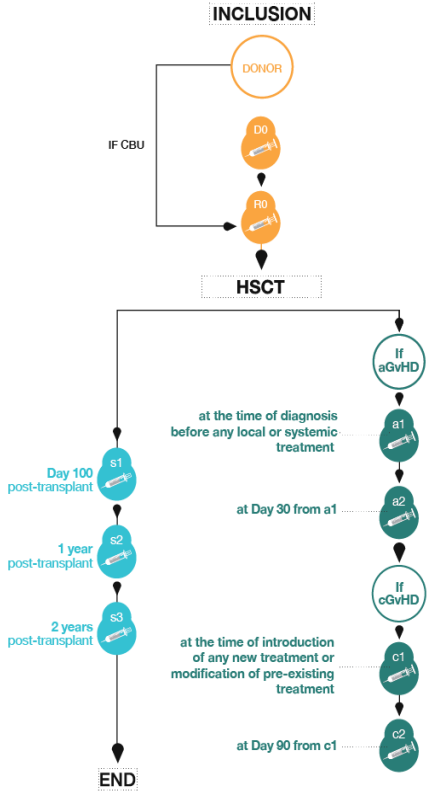
BIOLOGICAL FOLLOW-UP

- ✓ **All transplant types**
- ✓ Patients biological follow-up **from pre-transplant period until 2 years post-transplant**
- ✓ Sampling **at GvHD onset and following GvHD medical care**
- ✓ Availabilities (data as of 2019/03/08) :



	Number of sampled patients
Pre-transplant R0/D0 pairs	1964
Systematic samples post-transplant (s1/s2/s3)	3207
Acute GvHD	1989
Chronic GvHD	598
Complete biological FU* ∅GvHD	1036
Complete biological FU* aGvHD	484
Complete biological FU* cGvHD	159
Complete biological FU* aGvHD + cGvHD	92

* Kinetics including all the periods likely to be sampled



High-functional and proven logistics

In charge of blood sampling*

Transplant units

BRCs

Provision of critical reagents by CRYOSTEM

Pre-analytical treatment and storage of the derived samples*

Plasma (n = 49 616)*
Viable cells in DMSO (n = 66359)*
Dried pellets (n= 82 967)*
* Data as of 2019/03/08

*Harmonized procedures & protocols

EBMT
European
Bone Marrow
Transplant

Centralised Database **MBioLIMS (Modul-Bio)**

Unique ID and clinical data

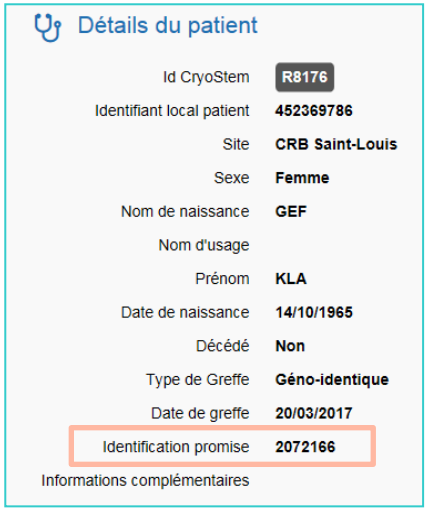
PROMISE
European register of transplanted patients

EBMT
European Society for Blood and Marrow Transplantation

CRYOSTEM database : centralisation of biological resources (biological samples + personal and GvHD clinical data)*

CRYOSTEM MBioLims designed for centralisation and follow-up

- ✓ **Biological resources centralisation**
- ✓ Generation of **unique ID** for patients, blood samples and aliquots
- ✓ **Biological follow-up display per patient**
- ✓ **Automatic e-mail reminder for sampling planification**
- ✓ Real-time reporting
- ✓ Labelling homogeneization
- ✓ Traceability and non-compliance management
- ✓ **Interoperability with PROMISE register**



Virtual data extracted from CRYOSTEM test database

Transplanted patients clinical follow-up

CLINICAL FOLLOW-UP

➢ **GvHD data collected via CRYOSTEM and recorded in the MBioLims database**

→ aGvHD : skin, liver and gut stages + corticoresistance
→ cGvHD : type, classification, evolution

➢ **Interoperability CRYOSTEM MBioLims // EBMT PROMISE register (to be extended to MACRO)**

→ Monthly import of PROMISE ID in CRYOSTEM MBioLims

→ **83% of CRYOSTEM ID correlated with PROMISE ID**

→ Allow samples and patients **multi-parametric selection** (diagnosis, conditioning, mismatch…) as part of the collection valorisation and annual call for projects

→ **Extraction of clinical data** for research projects using CRYOSTEM biological samples (diagnosis, CMV/EBV… status, HLA, GvHD prophylaxis, infections post-transplant….)

CRYOSTEM biological resources quality

QUALITY

Clinical Data :

✓ **Monitoring** of CRYOSTEM MBioLims database

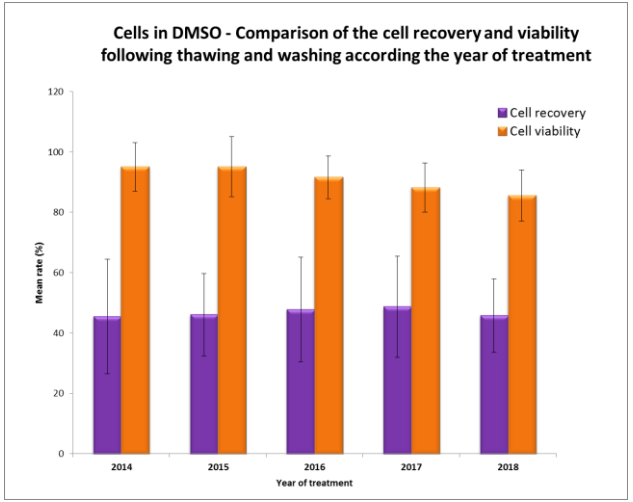
✓ **Data cross-checking** between CRYOSTEM & PROMISE

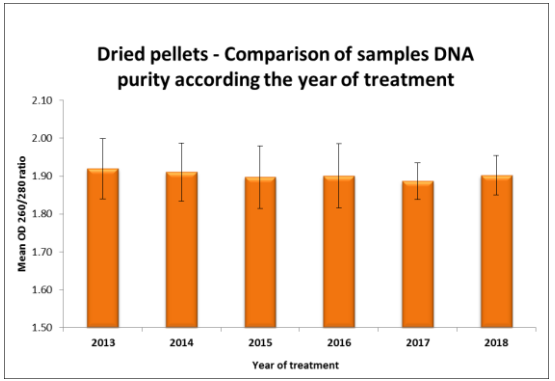
Biological samples :

✓ **Annual quality control campaign** on viable cells in DMSO and dried pellets (around 200 tested aliquots/year). Evaluation :

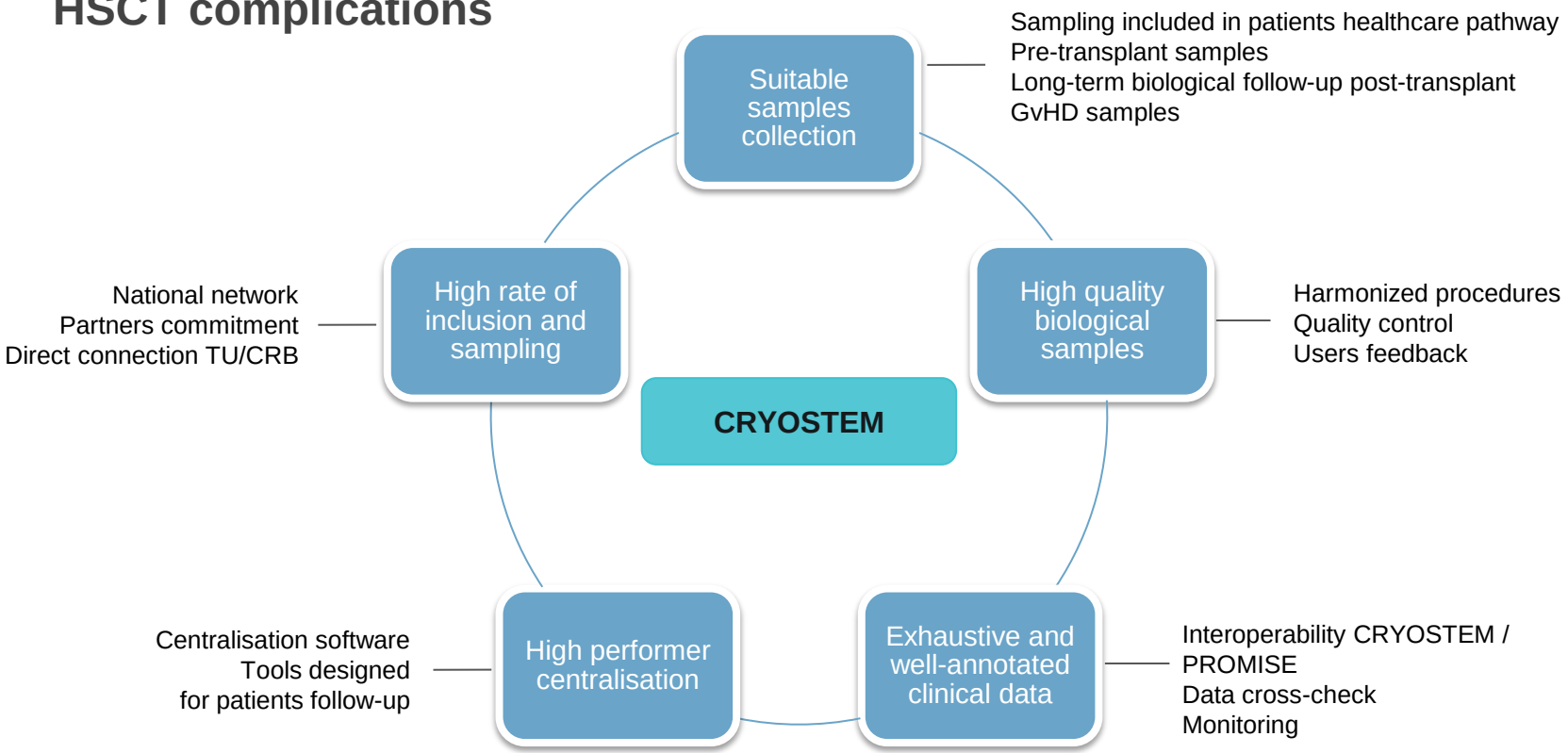
1. Aliquots conservation over the storage period
2. Treatment homogeneity between CRYOSTEM BRCs

✓ **Users feedback and satisfaction rate** monitored following samples provision and analyses





CRYOSTEM initiatives to meet the biological and clinical follow-up for HSCT complications



2. CRYOSTEM EXPERTISE EXTENDED TO HSCT FIELD

CRYOSTEM : 1 project, 2 experiences

CRYOSTEM

Collection of biological resources dedicated to HSCT complications

- Internationally recognized
- High value
- Promoted through annual call for projects
- Already used in 8 academic projects, national and international
- + 5000 samples provided since 2015
- Behind several scientific publications expected for 2019

Development of a Biobanking Network Expertise

After 7 years of existence, evaluation of
Feasibility / Implementation
Efficiency / Added-value

CRYOSTEM network & expertise :
a reference in biobanking

Since 2018 deployed to HSCT field for cohorts enrichment or ancillary studies

1st example : Supporting the epidemiologic cohort LEA

L.E.A.
Leucémies de l'Enfant et de l'Adolescent

CRYO-LEA

Collaboration objectives :

1. **Constitution of LEA biological collection**
2. **Identification of predictive genetic factors of the long-term effects regarding leukemia treatments**

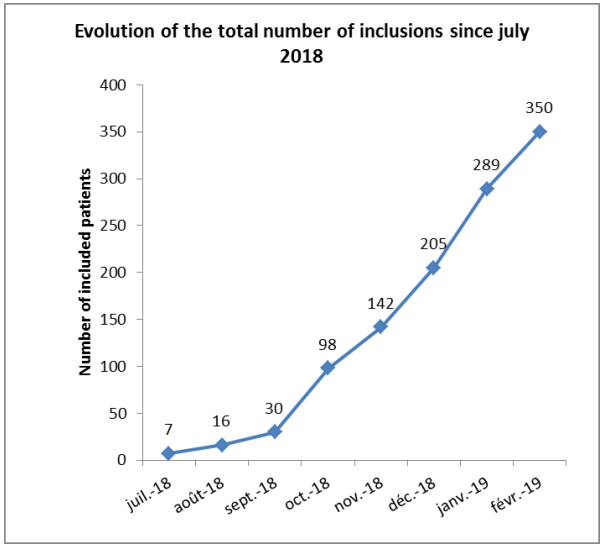
Expected inclusion : 4 000 patients

Biological samples :

- **Blood samples for patients treated by chemotherapy**
- **Skin biopsies for patients treated by HSCT**

Beginning of the collaboration : July 2018

CRYOSTEM contributions : regulatory & bioethical, collaboration agreement, needs analysis, set up of a new logistics track, practices harmonization, deployment of a centralisation tool, staff training, provision for research…



→ Nearly 2 600 available samples in almost 8 months
(data as of 2019/02/28)

Other examples : Supporting SFGM-TC

BIG

Collaboration objective :
Ancillary study / prospective protocol

209 included patients (data as of 2019/03/08)

Biological samples :
Blood samples and kinetics similar to those of CRYOSTEM

Beginning of the collaboration : April 2015

CRYOSTEM contributions : blood sampling, treatment and storage, GvHD data collection

BIG-included patients	Number
With pre-transplant samples D0/R0	50
With aGvHD samples	66
With cGvHD samples	16

MAC-HAPLO-MUD

Collaboration objective :
Ancillary study / prospective protocol

Expected inclusion : 200 patients and donors

Biological samples :
- **Blood samples**
- **Sampling kinetics reviewed and designed according the further experiments**

Beginning of the collaboration : March 2018

CRYOSTEM contributions : collaboration agreement, needs analysis, practices harmonization, deployment of centralisation tool, staff training, quality controls, provision for research…

CRYOSTEM

3. SHARING CRYOSTEM KNOW-HOW AND EXPERTISE FOR NEW CELLULAR THERAPIES

Which support & contributions could CRYOSTEM bring to new cellular therapies development ?

Regulatory & Ethical Support

- Bioethical and regulatory approaches (authorizations application…)
- Collaboration agreements writing
- Consents / supplementary information documents… writing

Logistics & Quality Support

- CRYOSTEM network already functional
- Needs-and-means analysis
- Practices harmonization
- Procedures / protocols / record sheets writing
- Deployment of centralisation and follow-up tools
- Staff training
- Biomonitoring
- Quality control
- Audit of structures

Strategy & Valorization Support

- Activity reports
- Promotion through call for projects
- Communication tools
- Samples provision management

CRYOSTEM, an opportunity of biobanking network tool for CAR-T clinical trials

Collaboration objectives

→ Collect biological samples of CAR-T treated patients for lymphoma, leukemia, myeloma ….

→ Understanding the underlying biological mechanisms

Biological follow-up

→Samples : blood / stools / urines / ganglions…

→Sampling kinetics designed according the effects demonstrated in the first clinical trials

Clinical follow-up

→ Clinical data collection linked to the EBMT register

Centralisation

→ Deployment of a dedicated database suitable and scalable to the sampling design

CRYOSTEM ADVANTAGES

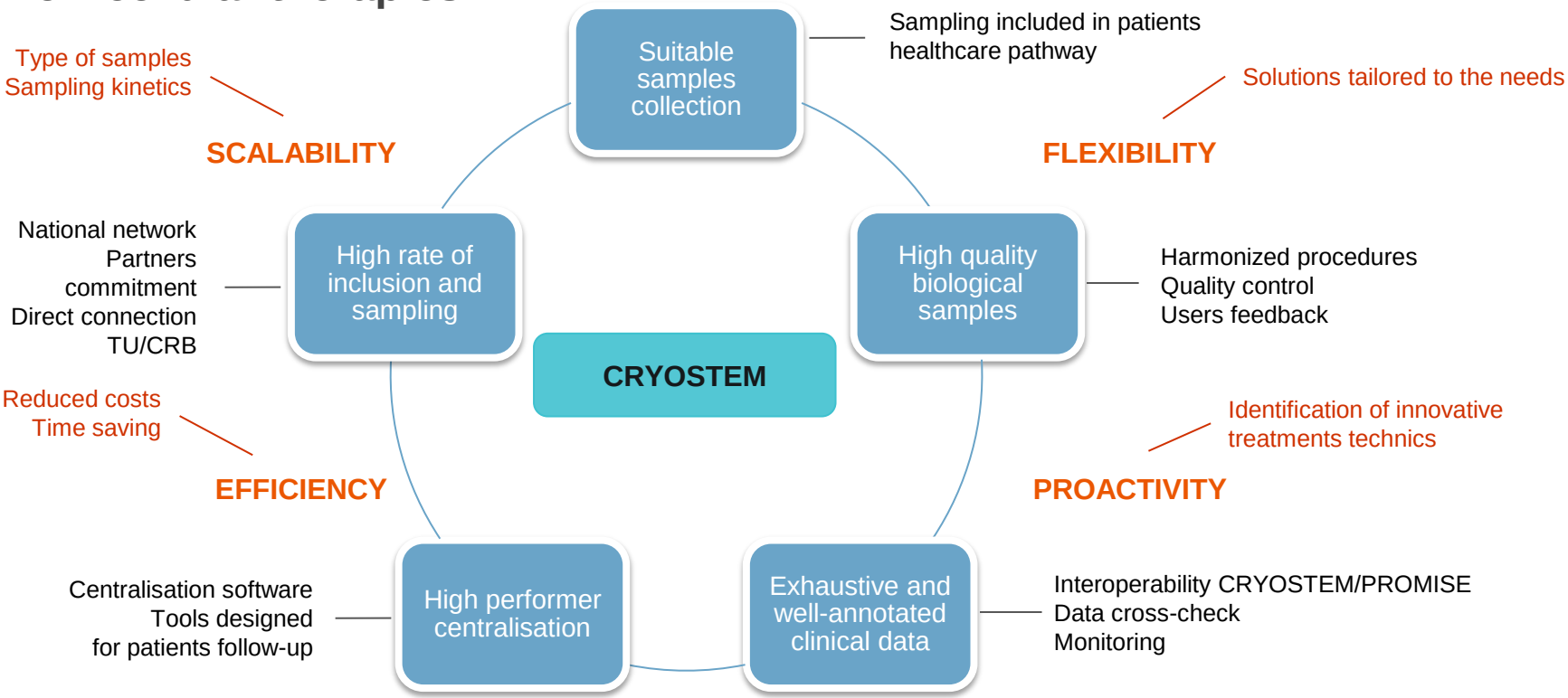
Overlap of CRYOSTEM network with CAR-T clinical trial centers

Identification of CRYOSTEM network BRCs according to their expertise in samples treatment

Connection with EBMT register already established

Long-standing partnership with the database provider

CRYOSTEM initiatives to meet the biological and clinical follow-up in new cellular therapies



A committed national collective

A European reference in biobanking network in HSCT field

Serving **other innovative health issues**

Thanks for your attention !

Questions ?

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