D7.1 Report summarising results of survey of EU countries to identify volumes and trends in relation to the import and export of stem cells

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Abbreviations

- BM = Bone Marrow

- CBU = Cord Blood Unit

- DLI = Donor Lymphocyte Infusion

- HLA = Human Leukocyte Antigen

- HSC = Hematopoietic Stem Cells

- PBSC = Peripheral Blood Stem Cell

- WMDA = World Marrow Donor Association

Executive Summary

This World Marrow Donor Association Annual Report describes the 2017 import and export data, trends and insight of unrelated blood stem cell products between the different EU member states and third countries. In 2017, almost 1,5 million volunteer individuals were recruited, and HLA typed into unrelated stem cell donor registries within the EU member states and 10,000 cord blood units were added to the inventory increasing the total number of available stem cell donors within the EU member states to 13,344,277 and worldwide over 33 million.

In 2017: within the EU member states 3,707 adult stem cell donations were imported and 3,719 exported and 12 cord blood products were imported and 172 exported.

In 2017, there were 3,429 adult stem cell donations exported to 19 countries outside of the EU member states and 954 adult stem cell donations imported from these countries. Additionally, 292 cord blood products where exported to countries out of the EU member states and 134 cord blood products were imported.

Introduction

Blood stem cell transplantation

Every year, thousands of patients around the world are diagnosed with leukemia and other blood-related diseases. In the past, this diagnosis was often fatal. Today, a blood stem cell transplant can be a potentially life-saving treatment for more than 70 different diseases. In a blood stem cell transplantation, a patient's defective stem cells are replaced with healthy ones from a donor. More than 50,000 patients worldwide receive transplants every year, and this number continues to rise.(1)

A blood stem cell is an immature cell that can develop into all types of blood cells, including white blood cells, red blood cells and platelets. Stem cells can be mostly found in the bone marrow (a spongy tissue inside the bones). Small numbers also are found in the peripheral blood (the flowing, circulation blood of the body) and the umbilical cord (the cord that connects a foetus to its mother's placenta). (2-4)

Stem cells develop into the three types of blood cells that the body needs:

- Red blood cells, which carry oxygen throughout the body
- White blood cells, which fight infections
- Platelets, which help the blood to clot

There are three possible sources of blood stem cells for donation:(4)

Bone marrow
(Collected from the pelvis)
The pelvis contains the largest number of blood stem cells. For this reason, cells from the cavity in the pelvic bone are used for a bone marrow donation.

Peripheral blood
(collected from the blood stream)
Normally, only very few stem cells are found in the blood. Hormone-like substances called growth factors can be given to blood stem cell donors a few days before the collection. This causes their blood stem cells to grow faster and to move from the bone marrow into the blood stream. Peripheral blood is collected from adult donors.

Umbilical cord blood
(collected from the placenta and umbilical cord)
After a baby is born, the blood that is left behind in the placenta and umbilical cord (known as cord blood) can be collected. It is then frozen and stored until required for transplantation.

In addition to the blood stem cell products, Donor Lymphocyte Infusion (DLI) can be applied. This is a type of therapy in which lymphocytes from the blood of a donor are given to a patient, who has already received a stem cell transplant from the same donor. The donor lymphocytes may kill remaining cancer cells. DLI is used to treat chronic myelogenous leukaemia (CML) that has come back and myeloma. It is being studied in the treatment of other types of cancer.(5)

HLA matching

Patients receiving blood stem cell transplants are matched with a volunteer donor through a test called HLA tissue typing. The immune system uses HLA proteins found in the surface of cells to identify which cells belong to you own body and which not. For HLA matching the patient as well as the potential donors will have blood drawn. This blood is tested in a specialised lab to figure out the HLA type. This will be compared to potential donors to see if there is a match. It could be difficult to find a match because some HLA types are less common. Patients are more likely to match someone with a similar ethnic background or ancestry. Because HLA markers are inherited, half from the mother and half from the father, each brother and sister who shares the same parents has a 25% chance of being a close HLA match. Unfortunately, many people do not have a good match within their family. A close match is important since it improves the chances for a successful transplant, it helps the donor cells engraft (grow and make new blood cells in the body) and reduces the risk of complications like graft-versus-host disease (GVHD). GVDH happens when the immune cells from the donated cells (the graft) attack the patient's body (the host). (6, 7) New donors should from the beginning be HLA typed in high resolution to avoid extra costs and time. Advanced resolution and precision of the exact HLA typing will lead to a better match and a faster donor choice in the Search and Match system.

Global network

Millions of volunteers have signed up to be a donor worldwide, and tens of thousands of patients receive blood stem cells from a healthy individual every year. Unfortunately, not every patient is able to find a potential match in the global database. This is more volunteers are needed to sign up as donors. WMDA services the global network by providing a centralised database of all potential donors around the world.

Import / export

This report shows the importance of global exchange of stem cell products. Nowadays people have spread all over the world which means that certain populations do not live in the same region anymore as they use to. Unfortunately, not every country has an established network for recruiting donors. Furthermore, smaller countries may not have enough volunteer donors or CBUs themselves. They rely on the international network of blood stem cell donor registries to find a suitable stem cell source.

The list of third countries who export from and import to the EU member states is shown in Appendix 1.

Questionnaire

In Appendix 2 the WMDA Questionnaire is shown with the questions regarding adult donor and CBU numbers and import and export data that were answered by the different registries worldwide.

Data from Latvia, Estonia and Malta is missing since these countries do not have a donor registry or a cord blood bank. Estonia has a collaboration with Finland to find their donor matches, so they import stem cell sources from other countries. Lithuania, Luxembourg, Portugal, Romania, Bulgaria, Denmark, Hungary and Ireland do not have a cord blood bank, so they import cord blood products from other countries.

In Appendix 3 the Global Trends movie is shown with a summary of the achievements over the past 20 years worldwide.

The following pages show the report per EU member state including the import and export data of the different stem cell products.

WMDA website

This summary report has been added to the Media Center on the WMDA website.

MEDIA CENTER

Search & Match Service 2017 >
Statistics Search & Match Service >
WMDA Finance & Activities Report 2017 >
WMDA Global Trends Report 2017 >
Report on EU Member States >

UPCOMING MEETINGS

2019 March 19-22
WMDA 25 year anniversary, Noordwijk, the Netherlands
Find here the registration link

2019 March 25
EBMT/WMDA Transplant Coordinator Day, Frankfurt, Germany
Find here the registration link

2019 March 24-27
EBMT Annual Meeting Frankfurt, Germany

WMDA
Austria

Number of registered and typed donors/CBUs on December 31st, 2017:   **100,918**

Number of donors and CBUs with various HLA typing

■ Donors: 98,107   ■ CBUs: 2,811

	HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing
Donors	23,822	43,640	226	2,811	27,608
CBUs	0	1,854	957	0	0

Adult volunteer donors/CBUs added to the database during 2017:   **28,334**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	28,334	0

	BM	PBSC	CBU	DLI
National	1	3	0	3
Export to EU member states	1	7	1	2
Export to third countries	5	12	0	0
Import from EU member states	14	94	7	6
Import from third countries	3	7	7	0

WMDA

Belgium

Number of registered and typed donors/CBUs on December 31st, 2017: **102,592**
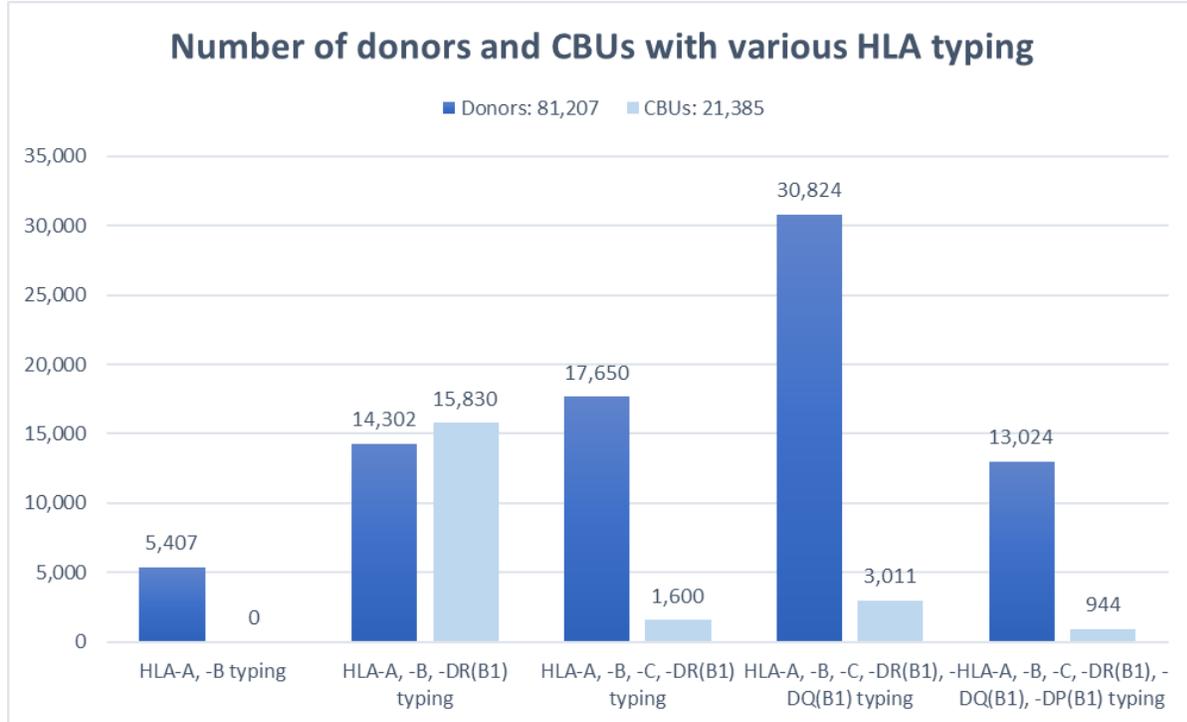
Number of donors and CBUs with various HLA typing

■ Donors: 81,207 ■ CBUs: 21,385

HLA typing	Donors	CBUs
HLA-A, -B typing	5,407	0
HLA-A, -B, -DR(B1) typing	14,302	15,830
HLA-A, -B, -C, -DR(B1) typing	17,650	1,600
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	30,824	3,011
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	13,024	944

Adult volunteer donors/CBUs added to the database during 2017: **3,821**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Number
Donors	3,085
CBUs	736
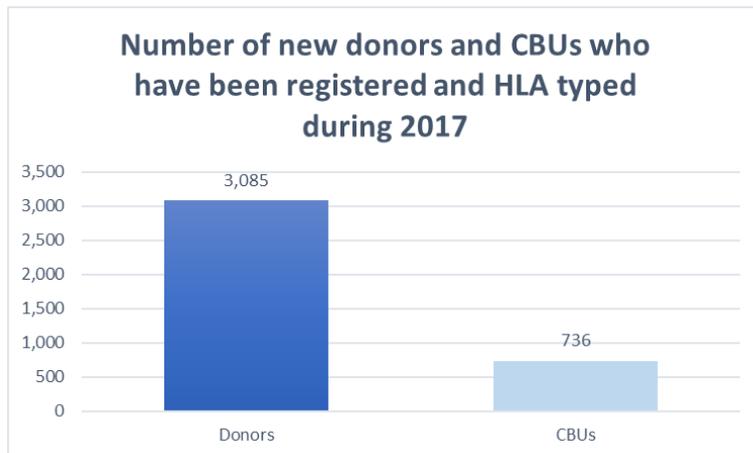
	BM	PBSC	CBU	DLI
National	0	9	3	1
Export to EU member states	1	21	10	3
Export to third countries	1	2	2	0
Import from EU member states	21	155	5	24
Import from third countries	4	36	3	5

WMDA

Bulgaria

Number of registered and typed donors/CBUs on December 31st, 2017: **1,461**
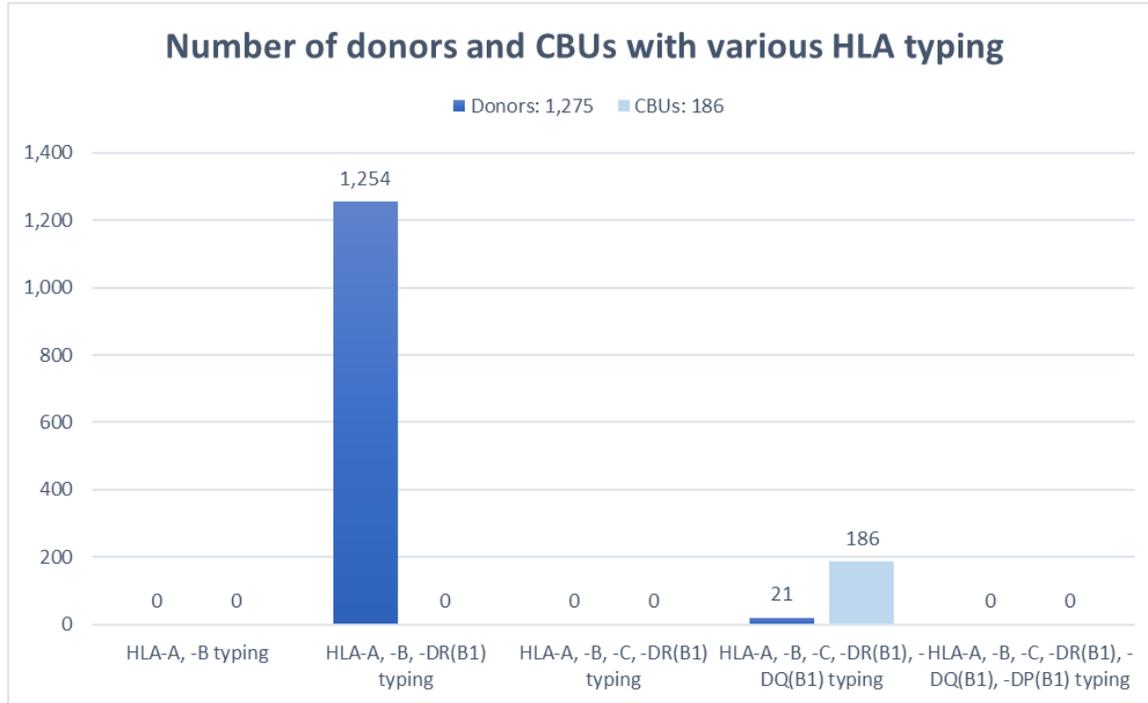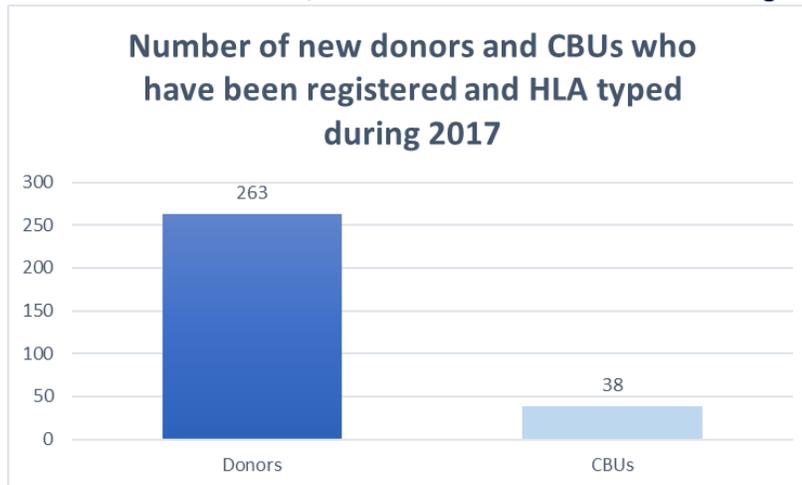
Number of donors and CBUs with various HLA typing

■ Donors: 1,275 ■ CBUs: 186

Category	Value
HLA-A, -B typing	0 / 0
HLA-A, -B, -DR(B1) typing	1,254 / 0
HLA-A, -B, -C, -DR(B1) typing	0 / 0
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	21 / 186
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	0 / 0

Adult volunteer donors/CBUs added to the database during 2017: **263**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	263	38

	BM	PBSC	CBU	DLI
National	0	0	-	0
Export to EU member states	0	0	-	0
Export to third countries	0	0	-	0
Import from EU member states	6	15	-	0
Import from third countries	0	1	-	0
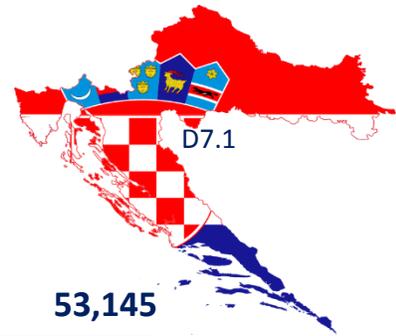
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Croatia

D7.1

Number of registered and typed donors/CBUs on December 31st, 2017: **53,145**
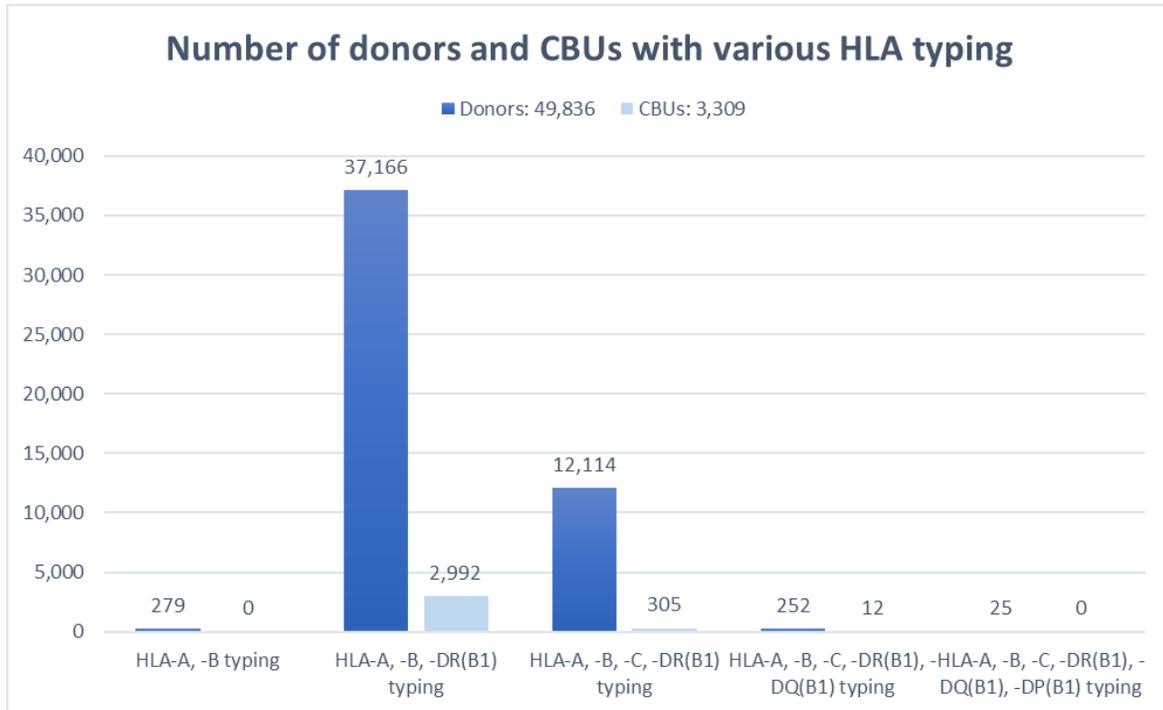
Number of donors and CBUs with various HLA typing

■ Donors: 49,836   ■ CBUs: 3,309

HLA typing	Donors	CBUs
HLA-A, -B typing	279	0
HLA-A, -B, -DR(B1) typing	37,166	2,992
HLA-A, -B, -C, -DR(B1) typing	12,114	305
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	252	12
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	25	0

Adult volunteer donors/CBUs added to the database during 2017: **2,800**

Number of new donors and CBUs who have been registered and HLA typed during 2017
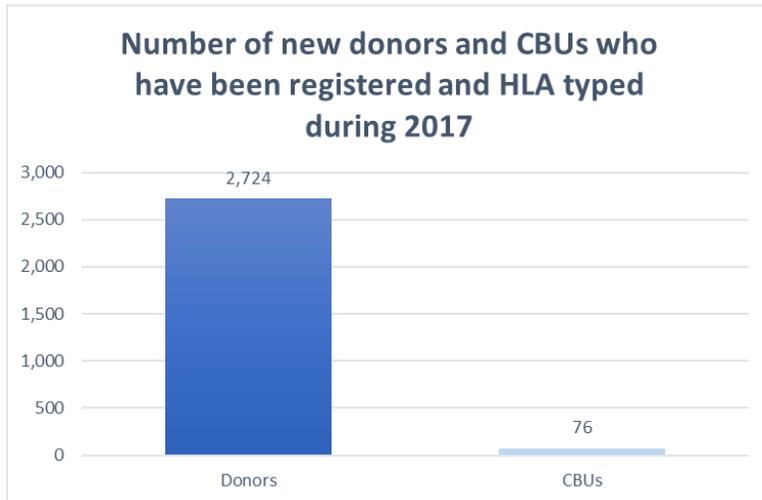
	Donors	CBUs
	2,724	76

	BM	PBSC	CBU	DLI
National	1	12	0	0
Export to EU member states	1	0	0	0
Export to third countries	1	0	1	0
Import from EU member states	7	22	0	2
Import from third countries	1	2	0	0

WMDA
Cyprus

Number of registered and typed donors/CBUs on December 31st, 2017: **161,173**
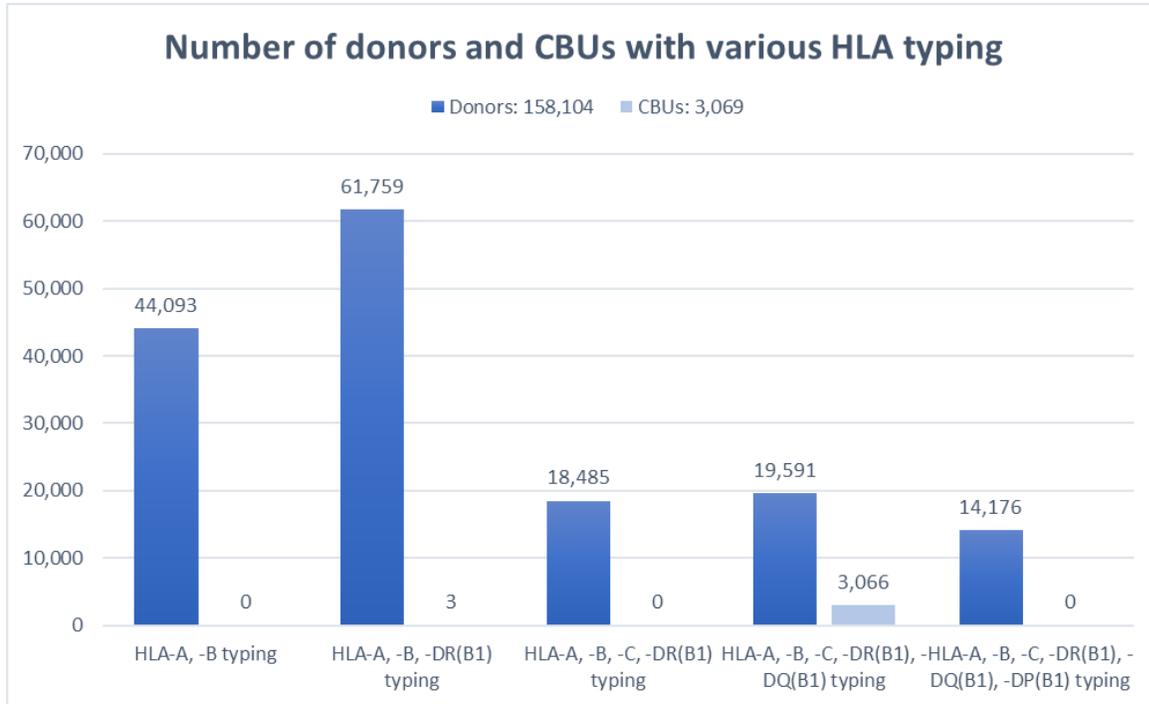
Number of donors and CBUs with various HLA typing

■ Donors: 158,104 ■ CBUs: 3,069

	Donors	CBUs
HLA-A, -B typing	44,093	0
HLA-A, -B, -DR(B1) typing	61,759	3
HLA-A, -B, -C, -DR(B1) typing	18,485	0
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	19,591	3,066
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	14,176	0

Adult volunteer donors/CBUs added to the database during 2017: **10,505**

Number of new donors and CBUs who have been registered and HLA typed during 2017

Donors	10,135
CBUs	370
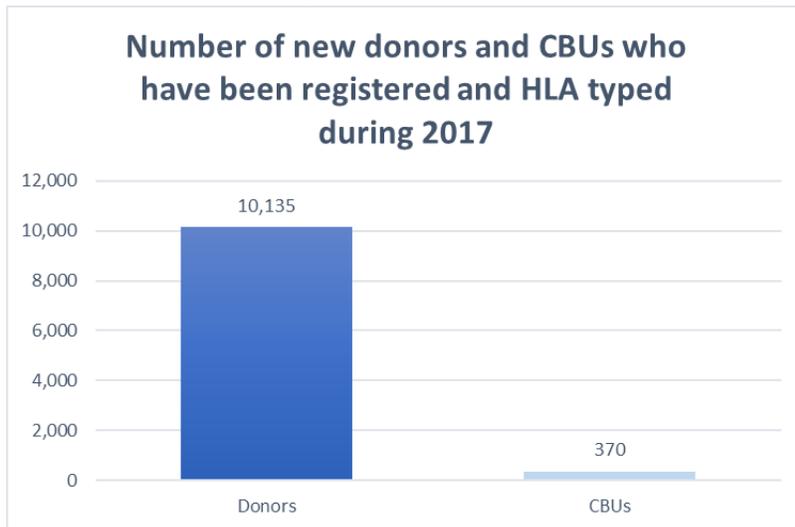
	BM	PBSC	CBU	DLI
National	2	7	0	1
Export to EU member states	1	23	0	1
Export to third countries	1	18	0	1
Import from EU member states	0	0	0	0
Import from third countries	0	0	0	0

WMDA

Czech Republic

Number of registered and typed donors/CBUs on December 31st, 2017: **109,989**
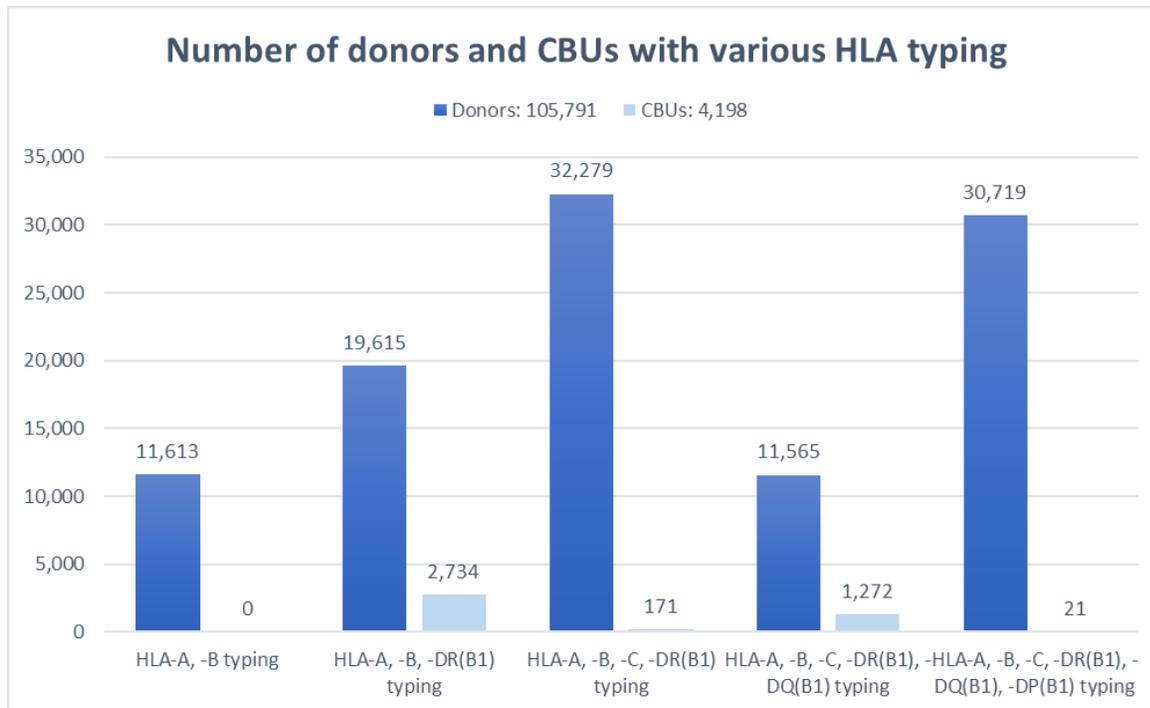
Number of donors and CBUs with various HLA typing

■ Donors: 105,791   ■ CBUs: 4,198

HLA typing	Donors	CBUs
HLA-A, -B typing	11,613	0
HLA-A, -B, -DR(B1) typing	19,615	2,734
HLA-A, -B, -C, -DR(B1) typing	32,279	171
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	11,565	1,272
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	30,719	21

Adult volunteer donors/CBUs added to the database during 2017: **12,075**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Count
Donors	12,048
CBUs	27
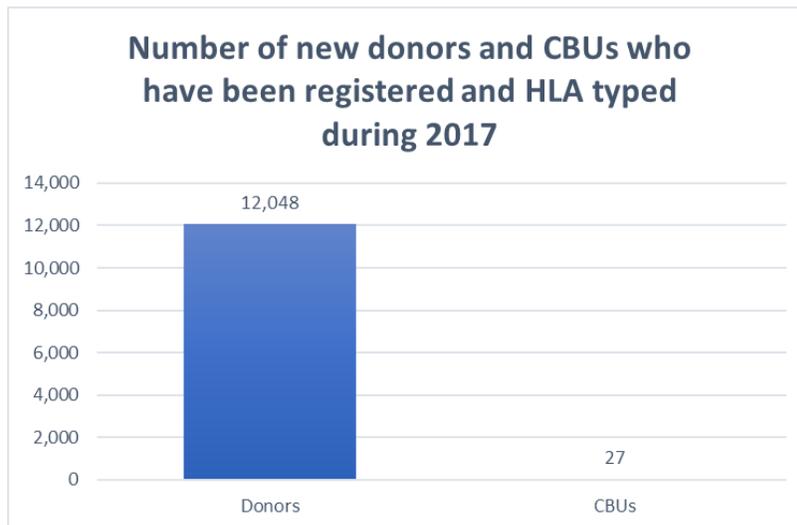
	BM	PBSC	CBU	DLI
National	4	24	1	7
Export to EU member states	3	5	0	1
Export to third countries	2	2	0	1
Import from EU member states	12	106	0	12
Import from third countries	1	10	0	2

WMDA

Denmark

Number of registered and typed donors/CBUs on December 31st, 2017: **52,792**
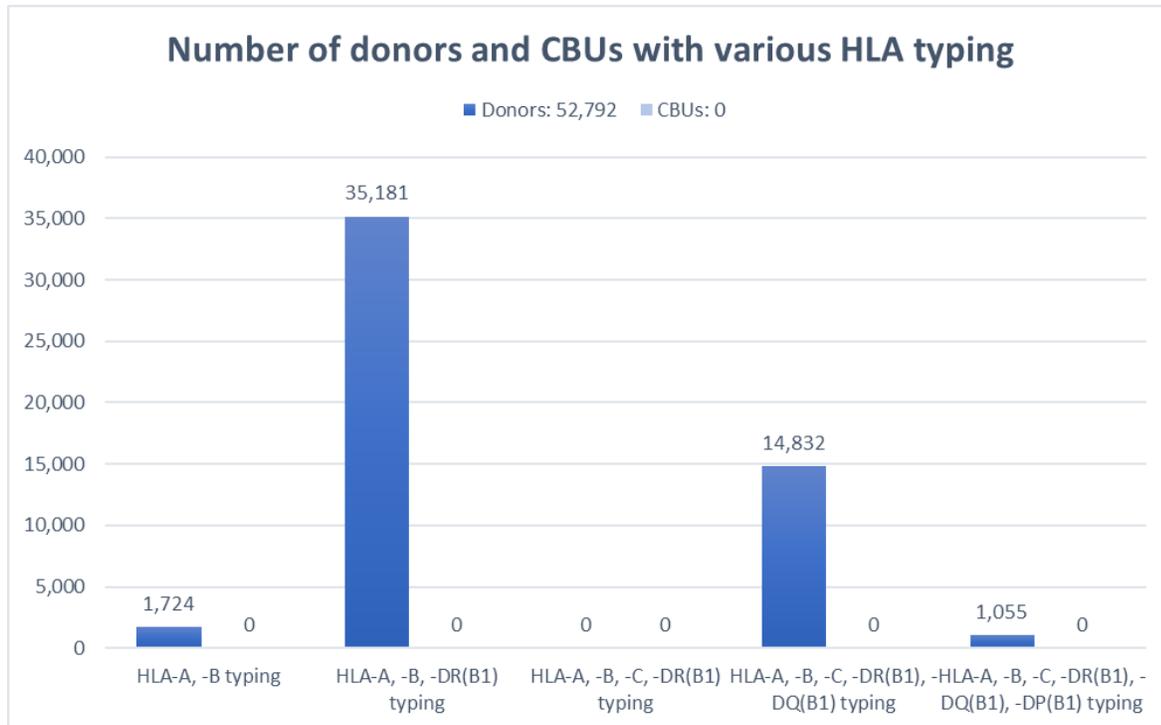
Number of donors and CBUs with various HLA typing

■ Donors: 52,792 ■ CBUs: 0

HLA typing	Count
HLA-A, -B typing	1,724 / 0
HLA-A, -B, -DR(B1) typing	35,181 / 0
HLA-A, -B, -C, -DR(B1) typing	0 / 0
HLA-A, -B, -C, -DR(B1), DQ(B1) typing	14,832 / 0
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	1,055 / 0

Adult volunteer donors/CBUs added to the database during 2017: **894**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Count
Donors	894
CBUs	0
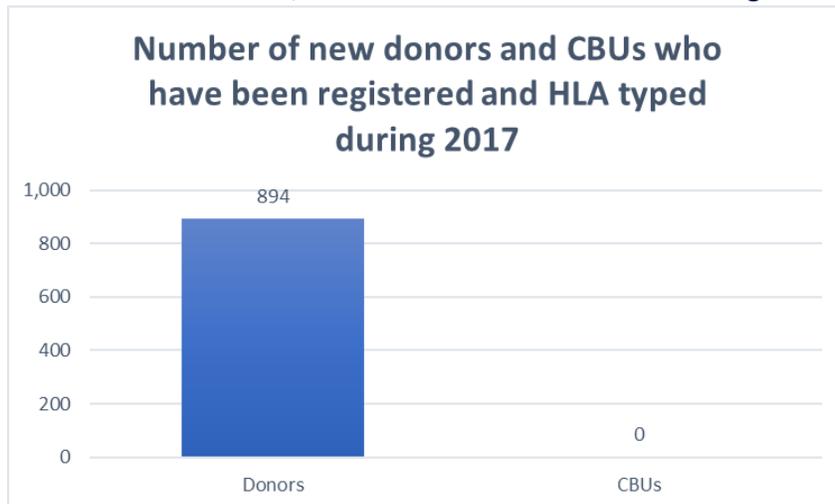
	BM	PBSC	CBU	DLI
National	0	0	-	0
Export to EU member states	0	9	-	1
Export to third countries	0	0	-	0
Import from EU member states	24	82	2	0
Import from third countries	6	10	0	0

WMDA

Finland

Number of registered and typed donors/CBUs on December 31st, 2017: **44,833**
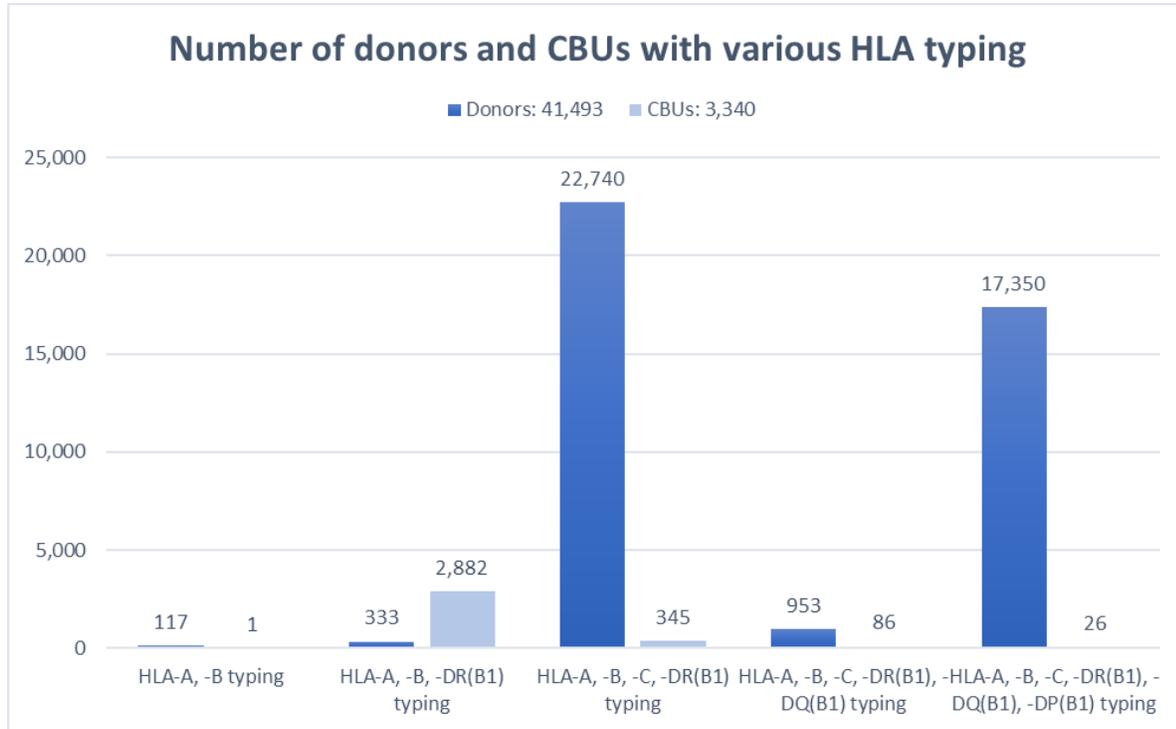
Number of donors and CBUs with various HLA typing

■ Donors: 41,493   ■ CBUs: 3,340

HLA typing category	Donors	CBUs
HLA-A, -B typing	117	1
HLA-A, -B, -DR(B1) typing	333	2,882
HLA-A, -B, -C, -DR(B1) typing	22,740	345
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	953	86
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	17,350	26

Adult volunteer donors/CBUs added to the database during 2017: **9,032**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Count
Donors	9,032
CBUs	0
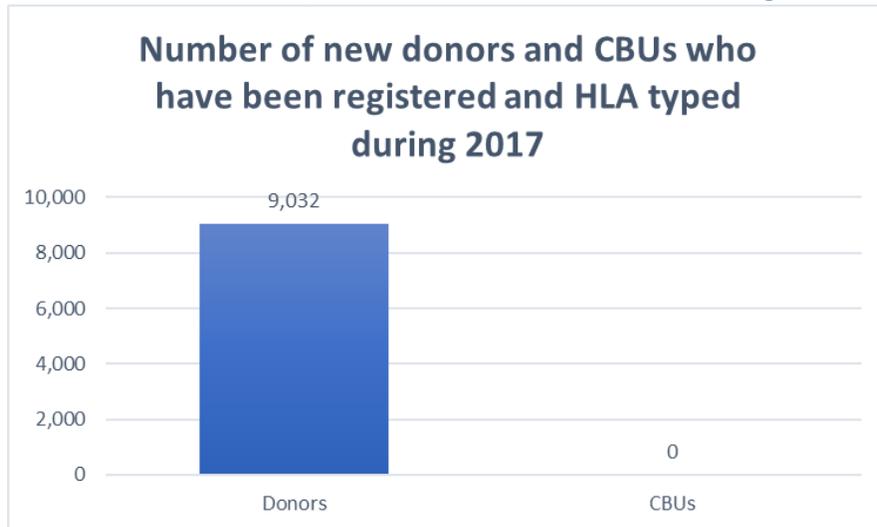
	BM	PBSC	CBU	DLI
National	7	20	1	2
Export to EU member states	3	5	0	1
Export to third countries	0	3	1	0
Import from EU member states	10	58	0	6
Import from third countries	1	7	0	1
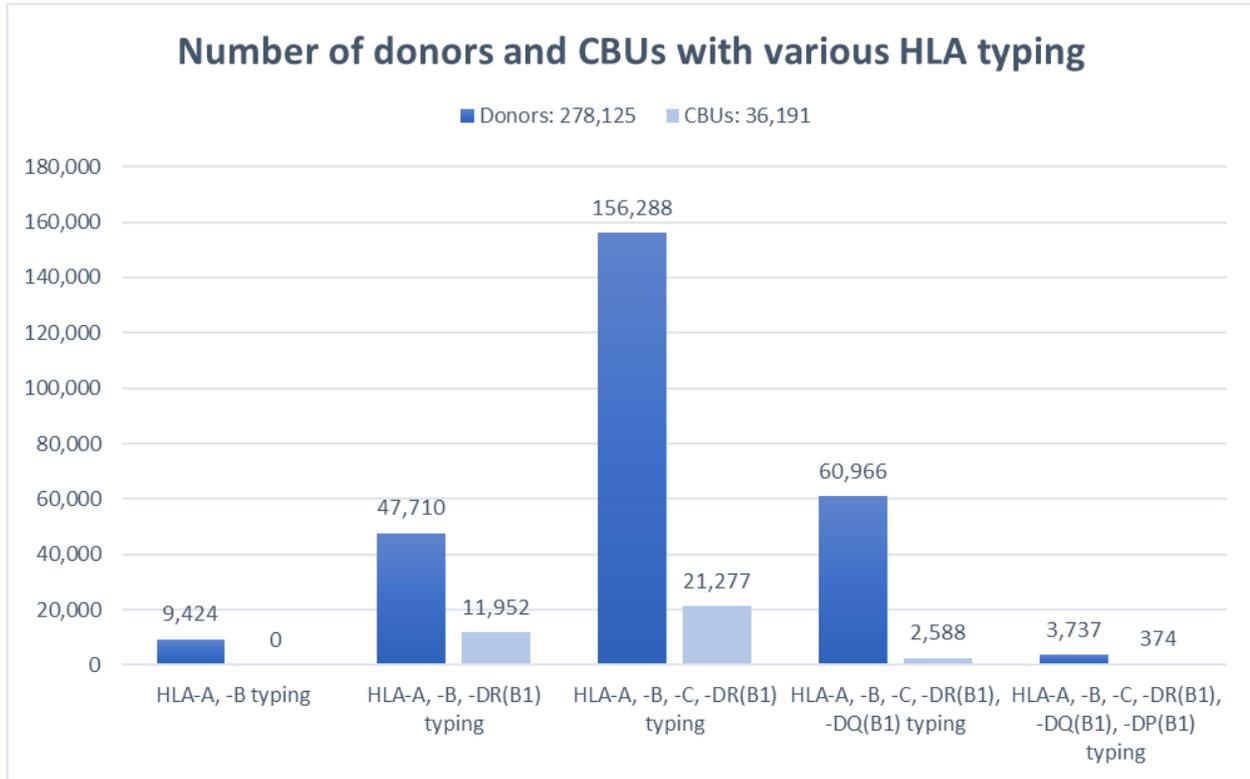
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WMDA

France

Number of donors and CBUs with various HLA typing

■ Donors: 278,125   ■ CBUs: 36,191

HLA typing	Donors	CBUs
HLA-A, -B typing	9,424	0
HLA-A, -B, -DR(B1) typing	47,710	11,952
HLA-A, -B, -C, -DR(B1) typing	156,288	21,277
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	60,966	2,588
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	3,737	374

Adult volunteer donors/CBUs added to the database during 2017:   **22,120**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Value
Donors	20,866
CBUs	1,254
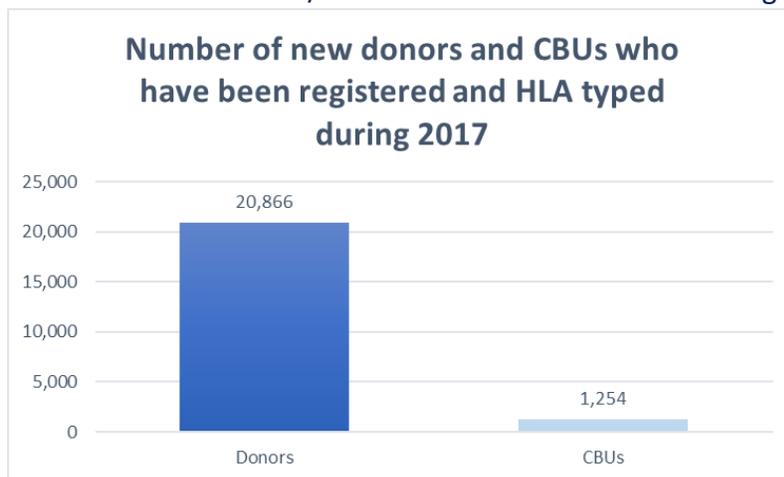
	BM	PBSC	CBU	DLI
National	26	96	45	19
Export to EU member states	13	37	40	4
Export to third countries	5	18	67	1
Import from EU member states	126	538	43	77
Import from third countries	41	98	22	15

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WMDA
Germany

Number of registered and typed donors/CBUs on December 31st, 2017:   **7,754,663**
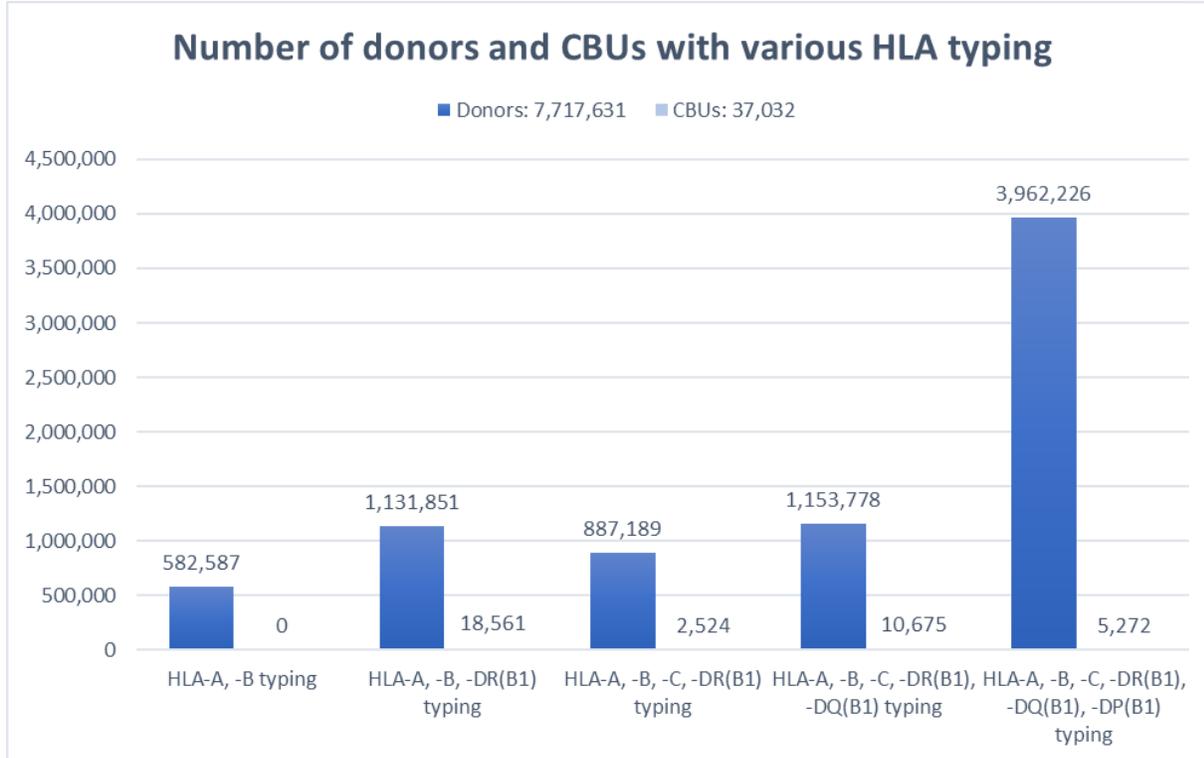
Number of donors and CBUs with various HLA typing

■ Donors: 7,717,631   ■ CBUs: 37,032

HLA typing	Donors	CBUs
HLA-A, -B typing	582,587	0
HLA-A, -B, -DR(B1) typing	1,131,851	18,561
HLA-A, -B, -C, -DR(B1) typing	887,189	2,524
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	1,153,778	10,675
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	3,962,226	5,272

Adult volunteer donors/CBUs added to the database during 2017:   **674,394**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	673,555	839
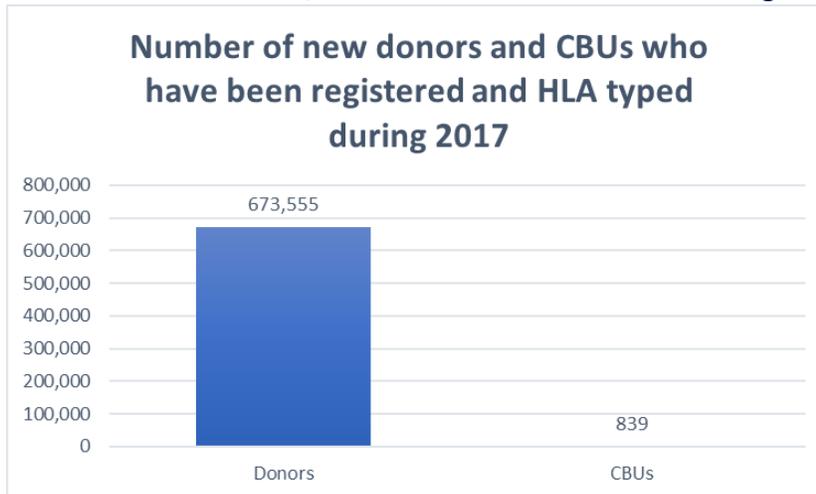
	BM	PBSC	CBU	DLI
National	228	1,674	1	277
Export to EU member states	452	2,090	28	254
Export to third countries	557	1,915	50	135
Import from EU member states	23	307	0	43
Import from third countries	23	169	0	13

Greece

07.1

Number of registered and typed donors/CBUs on December 31st, 2017:   **156,515**
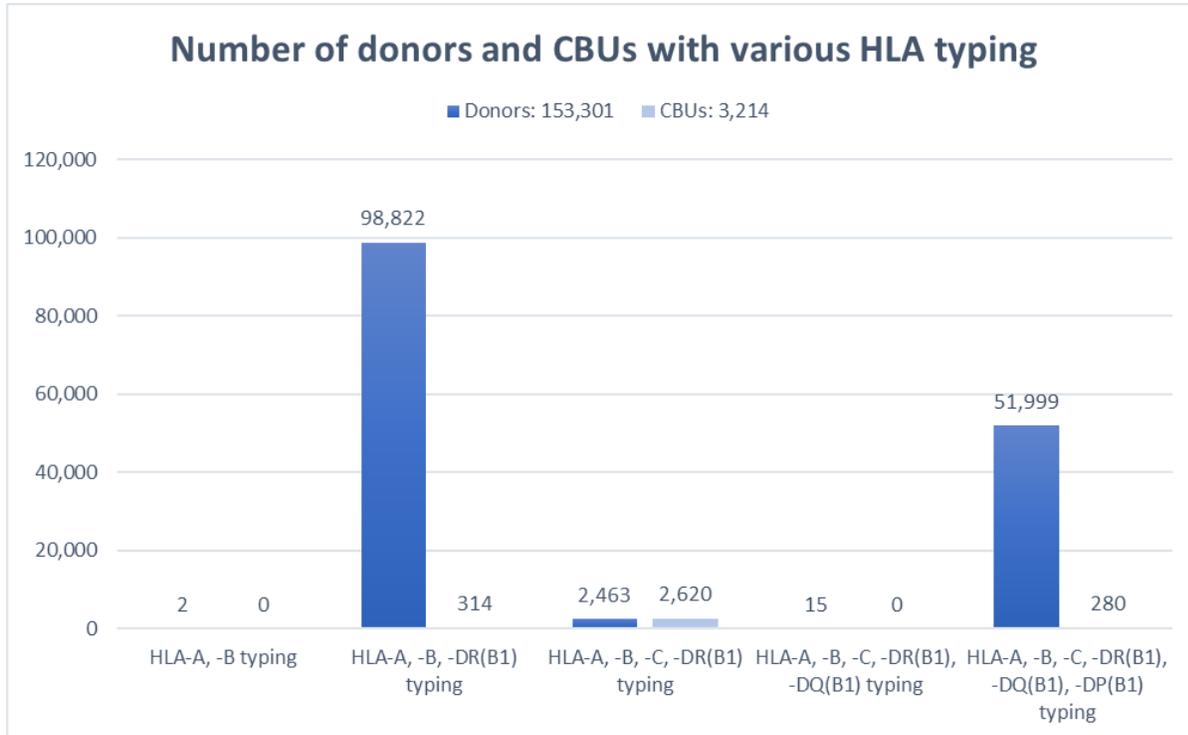
Number of donors and CBUs with various HLA typing

■ Donors: 153,301   ■ CBUs: 3,214

HLA typing category	Value
HLA-A, -B typing	2 / 0
HLA-A, -B, -DR(B1) typing	98,822 / 314
HLA-A, -B, -C, -DR(B1) typing	2,463 / 2,620
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	15 / 0
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	51,999 / 280

Adult volunteer donors/CBUs added to the database during 2017:   **62,784**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Value
Donors	62,470
CBUs	314
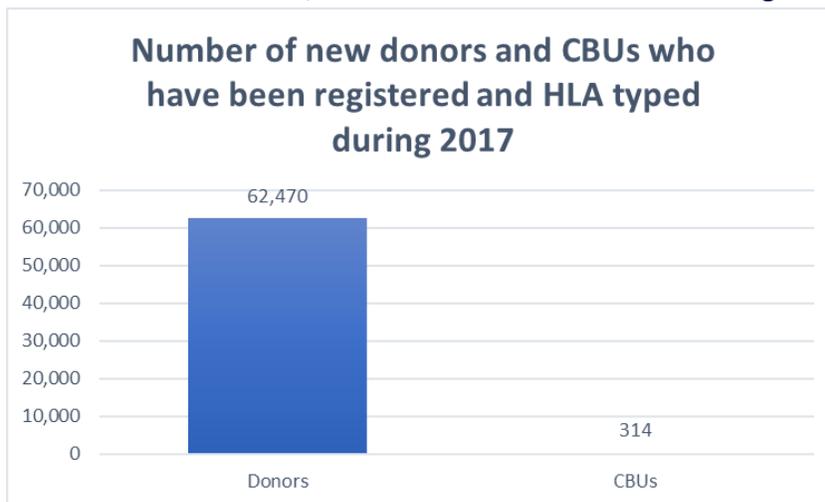
	BM	PBSC	CBU	DLI
National	4	17	1	2
Export to EU member states	0	16	0	2
Export to third countries	0	6	0	0
Import from EU member states	8	46	4	2
Import from third countries	1	9	3	5

WMDA

Hungary

Number of registered and typed donors/CBUs on December 31st, 2017:   **7,023**
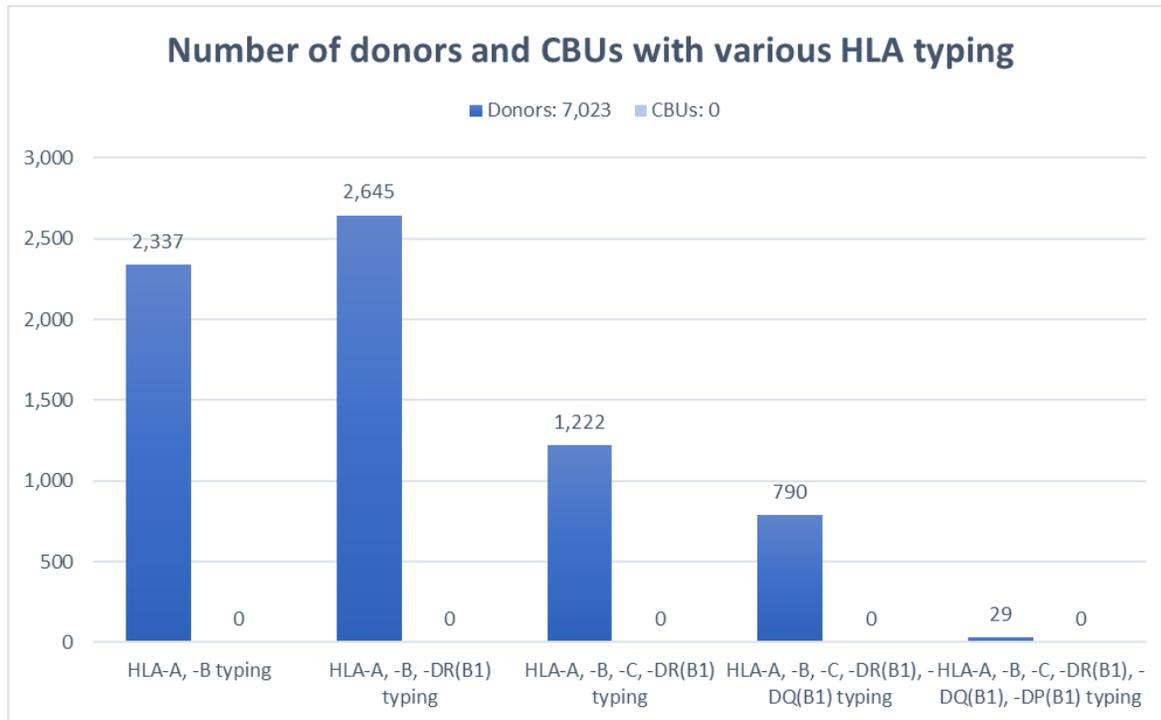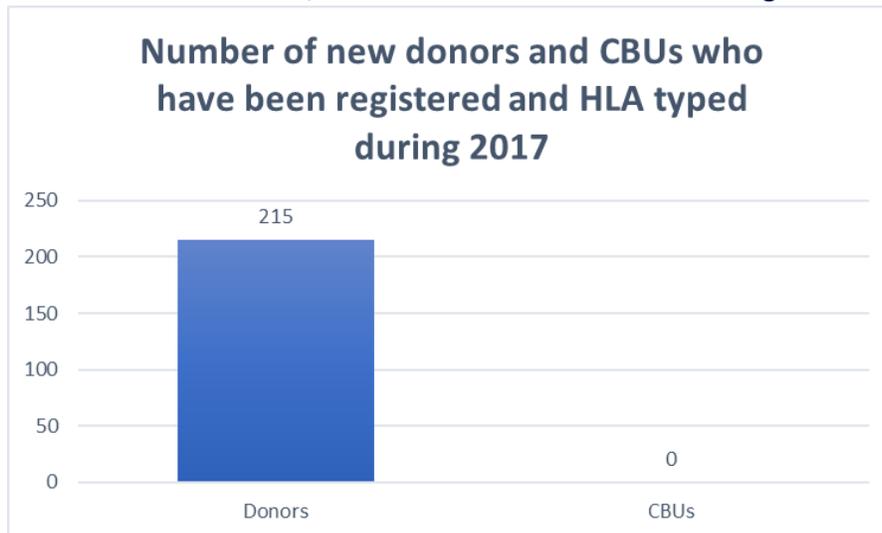
Number of donors and CBUs with various HLA typing

■ Donors: 7,023   ■ CBUs: 0

	Donors	CBUs
HLA-A, -B typing	2,337	0
HLA-A, -B, -DR(B1) typing	2,645	0
HLA-A, -B, -C, -DR(B1) typing	1,222	0
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	790	0
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	29	0

Adult volunteer donors/CBUs added to the database during 2017:   **215**

Number of new donors and CBUs who have been registered and HLA typed during 2017

Donors	CBUs
215	0

	BM	PBSC	CBU	DLI
National	0	0	-	0
Export to EU member states	0	0	-	0
Export to third countries	0	0	-	0
Import from EU member states	11	49	4	6
Import from third countries	2	4	0	1

WMDA

Ireland

Number of registered and typed donors/CBUs on December 31st, 2017:   **22,195**
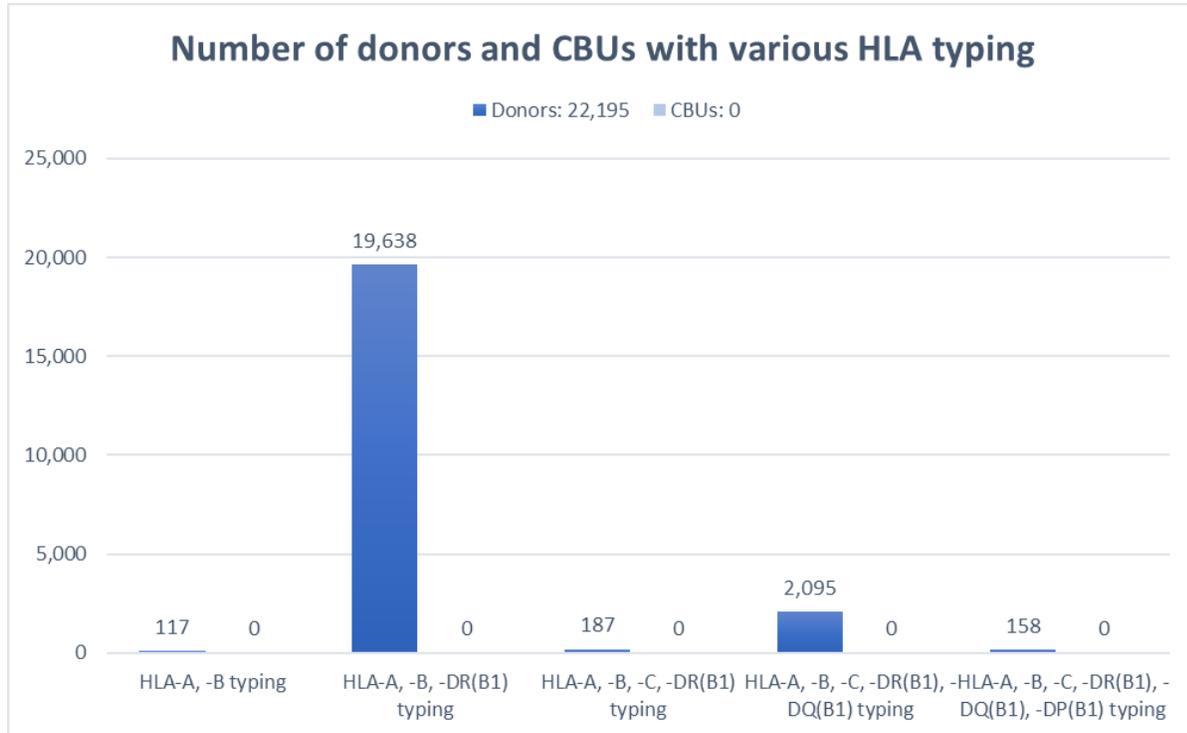
Number of donors and CBUs with various HLA typing

■ Donors: 22,195   ■ CBUs: 0

HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing
117 / 0	19,638 / 0	187 / 0	2,095 / 0	158 / 0

Adult volunteer donors/CBUs added to the database during 2017:   **445**

Number of new donors and CBUs who have been registered and HLA typed during 2017
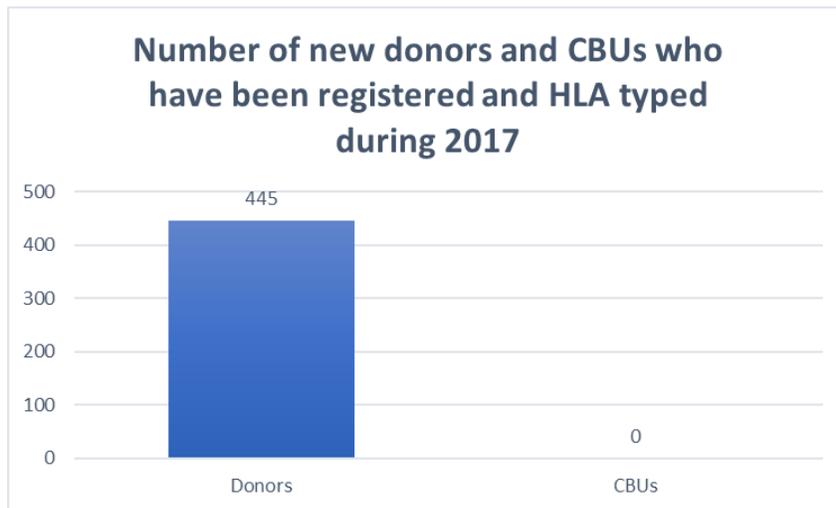
Donors	CBUs
445	0

	BM	PBSC	CBU	DLI
National	1	2	-	1
Export to EU member states	0	1	-	0
Export to third countries	0	2	-	0
Import from EU member states	14	31	0	4
Import from third countries	1	6	0	0
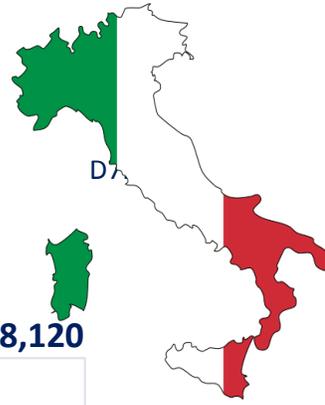
WMDA

Italy

Number of registered and typed donors/CBUs on December 31st, 2017:   **428,120**
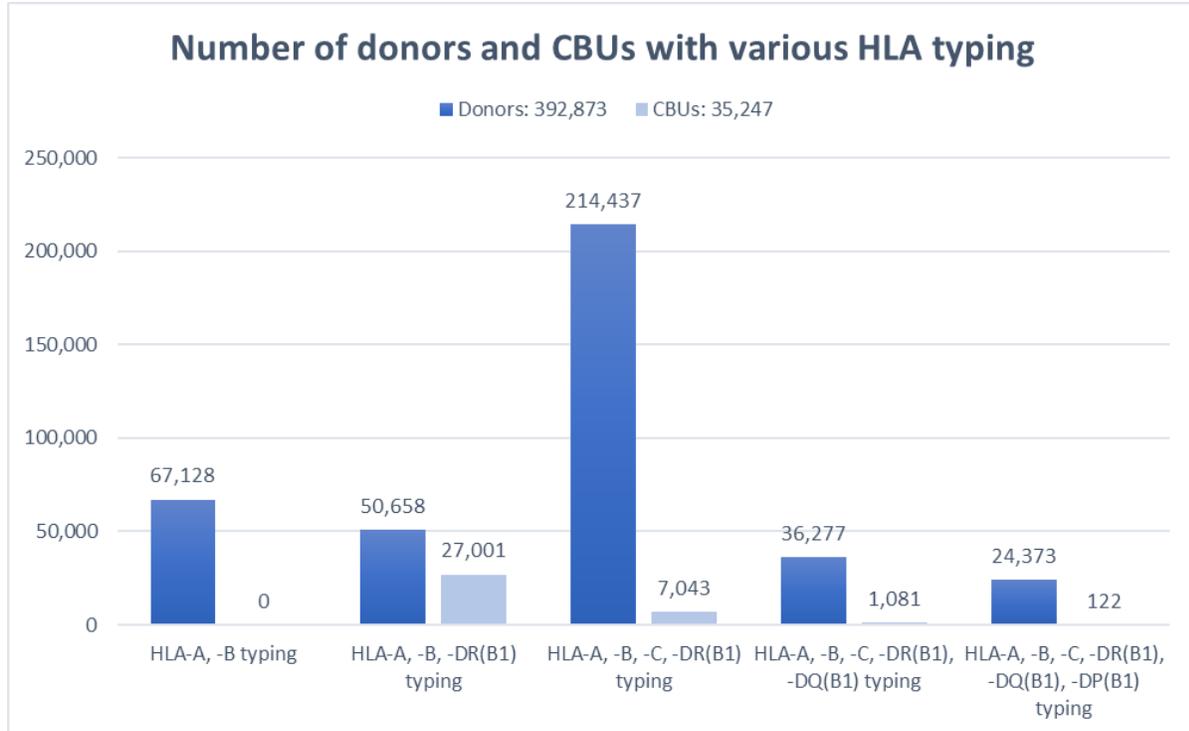
Number of donors and CBUs with various HLA typing

■ Donors: 392,873   ■ CBUs: 35,247

	HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing
Donors	67,128	50,658	214,437	36,277	24,373
CBUs	0	27,001	7,043	1,081	122

Adult volunteer donors/CBUs added to the database during 2017:   **24,541**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	23,718	823
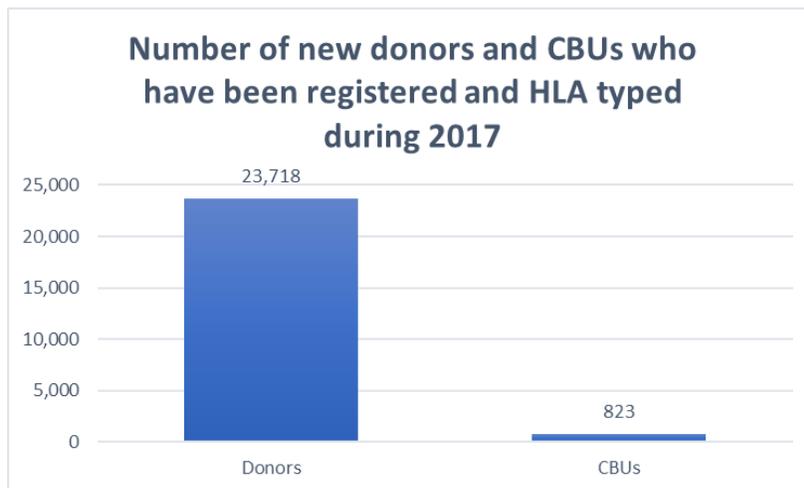
	BM	PBSC	CBU	DLI
National	48	111	2	15
Export to EU member states	8	37	12	7
Export to third countries	9	15	15	2
Import from EU member states	146	357	13	42
Import from third countries	42	126	13	12

⊕WMDA
Lithuania

Number of registered and typed donors/CBUs on December 31st, 2017:   **11,845**
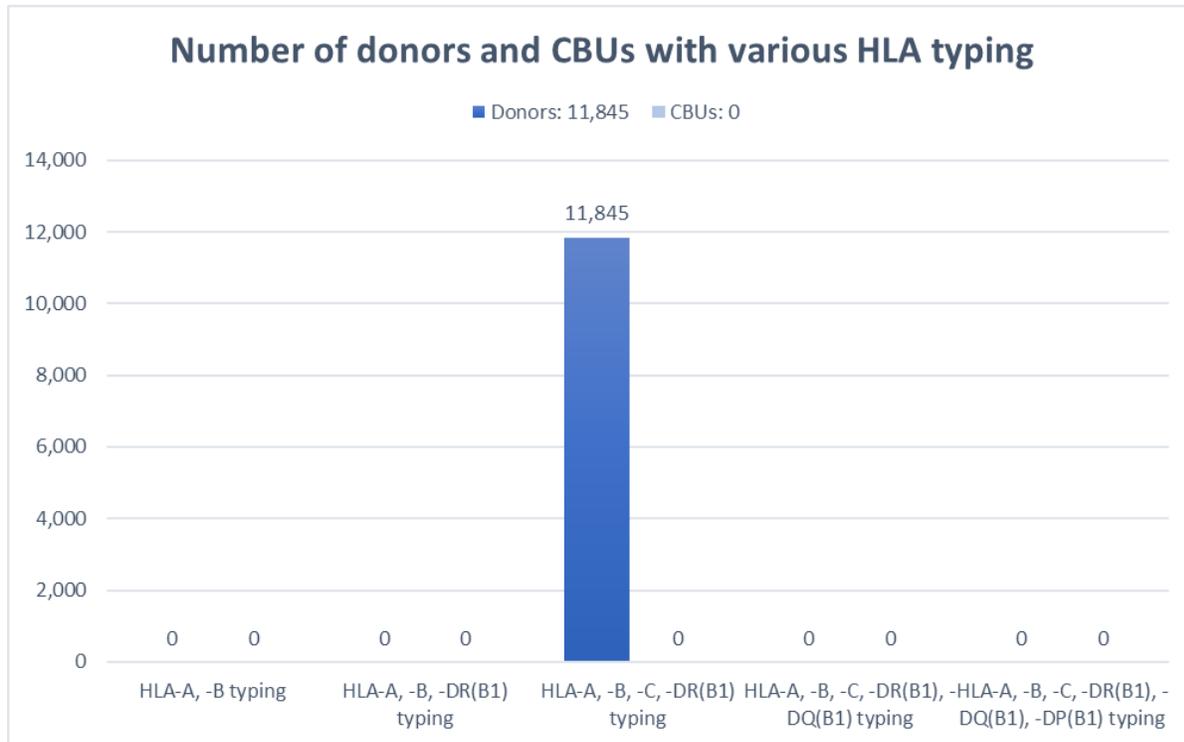
Number of donors and CBUs with various HLA typing

■ Donors: 11,845   ■ CBUs: 0

	HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing		
	0	0	0	0	11,845	0	0	0	0

Adult volunteer donors/CBUs added to the database during 2017:   **344**

Number of new donors and CBUs who have been registered and HLA typed during 2017
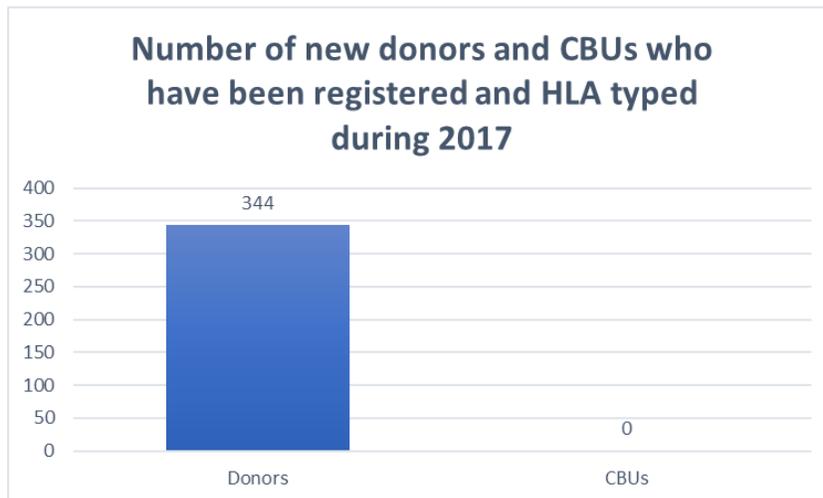
Donors	CBUs
344	0

	BM	PBSC	CBU	DLI
National	0	10	-	0
Export to EU member states	0	3	-	0
Export to third countries	0	1	-	0
Import from EU member states	7	25	0	1
Import from third countries	0	3	0	1

WMDA
Luxembourg

Number of registered and typed donors/CBUs on December 31st, 2017:   **7,941**
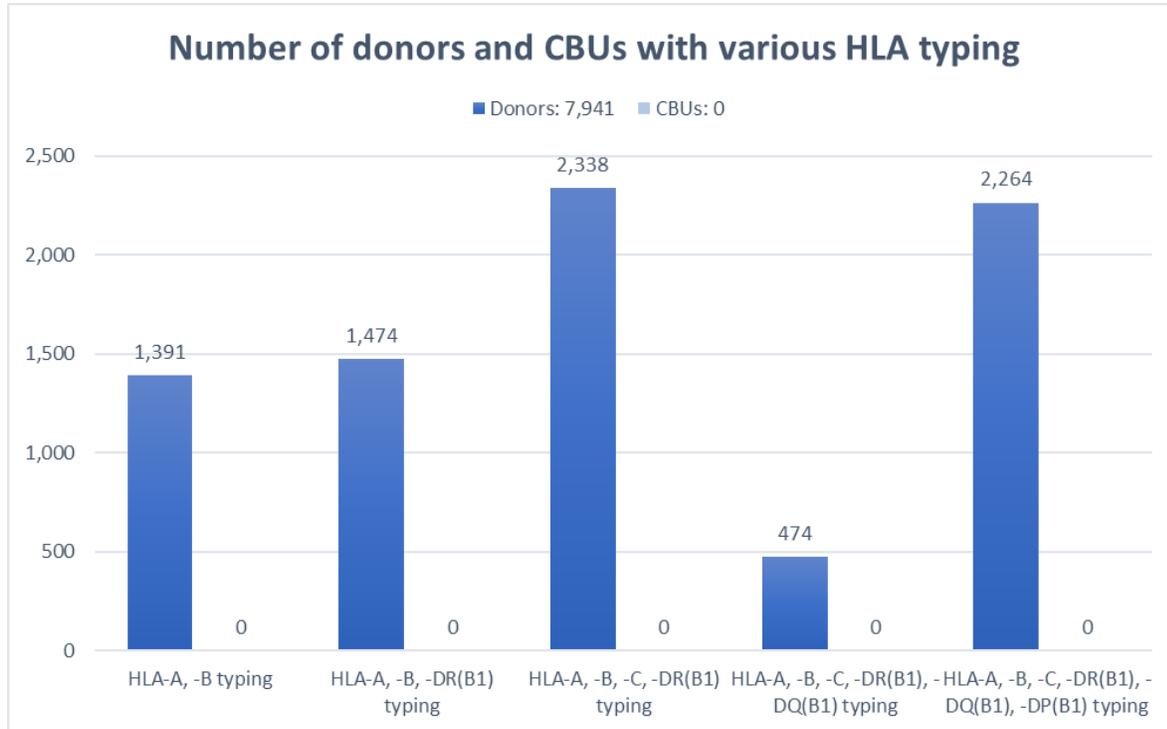
Number of donors and CBUs with various HLA typing

■ Donors: 7,941   ■ CBUs: 0

HLA typing	Donors
HLA-A, -B typing	1,391
HLA-A, -B, -DR(B1) typing	1,474
HLA-A, -B, -C, -DR(B1) typing	2,338
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	474
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	2,264

Adult volunteer donors/CBUs added to the database during 2017:   **860**

Number of new donors and CBUs who have been registered and HLA typed during 2017

Donors: 860
CBUs: 0
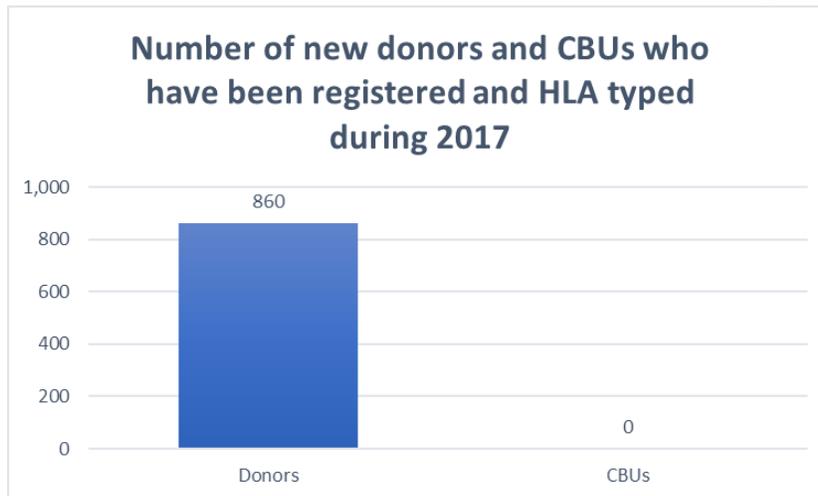
	BM	PBSC	CBU	DLI
National	0	0	-	0
Export to EU member states	0	1	-	0
Export to third countries	1	0	-	1
Import from EU member states	0	0	0	0
Import from third countries	0	0	0	0

WMDA

Netherlands

Number of registered and typed donors/CBUs on December 31st, 2017: **197,756**
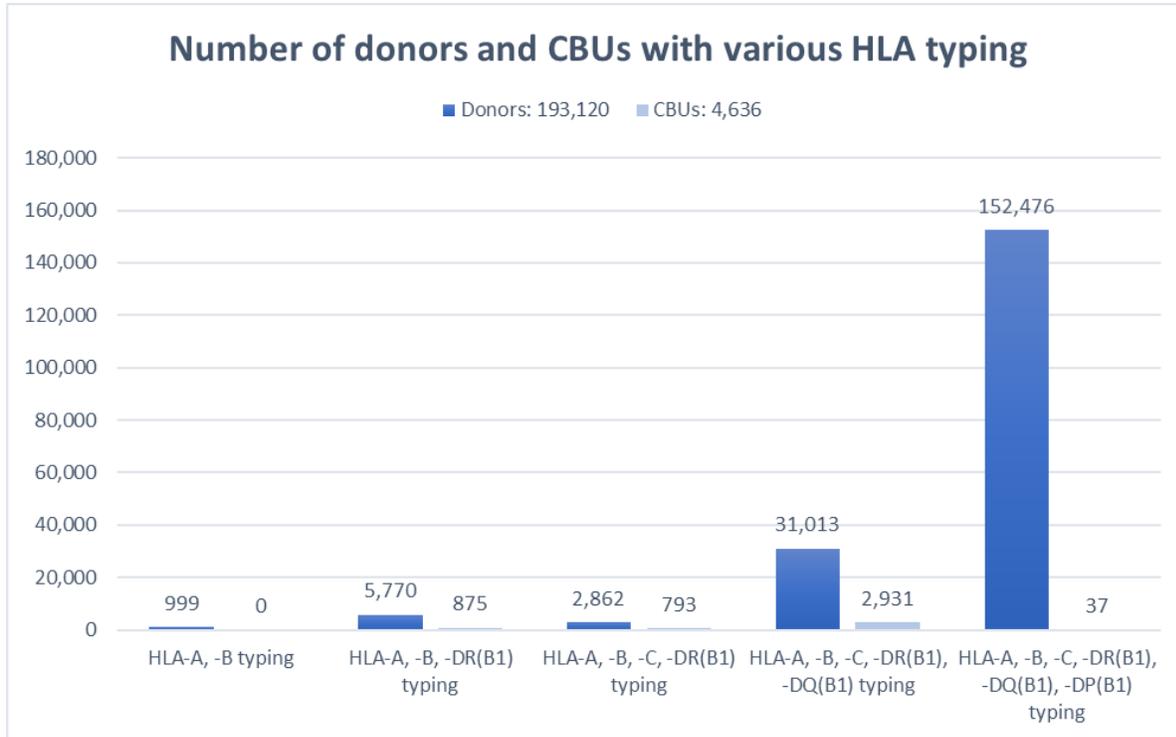
Number of donors and CBUs with various HLA typing

■ Donors: 193,120   ■ CBUs: 4,636

HLA typing category	Donors	CBUs
HLA-A, -B typing	999	0
HLA-A, -B, -DR(B1) typing	5,770	875
HLA-A, -B, -C, -DR(B1) typing	2,862	793
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	31,013	2,931
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	152,476	37

Adult volunteer donors/CBUs added to the database during 2017: **50,462**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	50,124	338
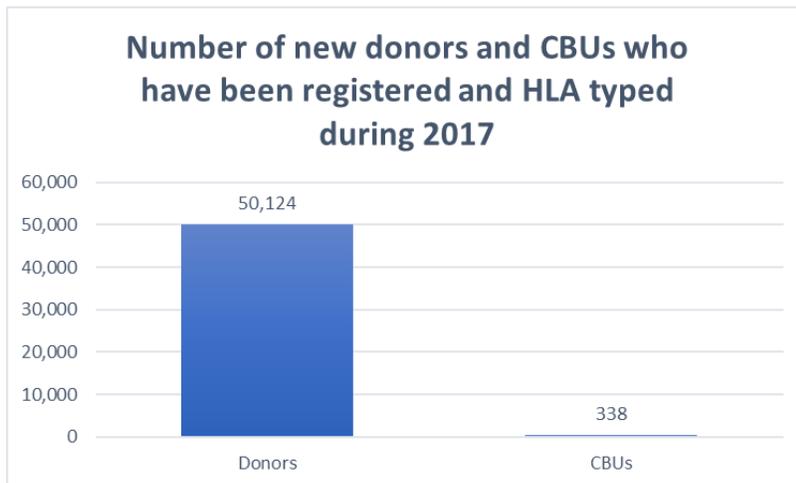
	BM	PBSC	CBU	DLI
National	3	13	3	3
Export to EU member states	14	41	1	3
Export to third countries	11	17	2	1
Import from EU member states	23	254	49	46
Import from third countries	5	39	27	8

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WMDA

Poland

Number of registered and typed donors/CBUs on December 31st, 2017: **1,395,630**
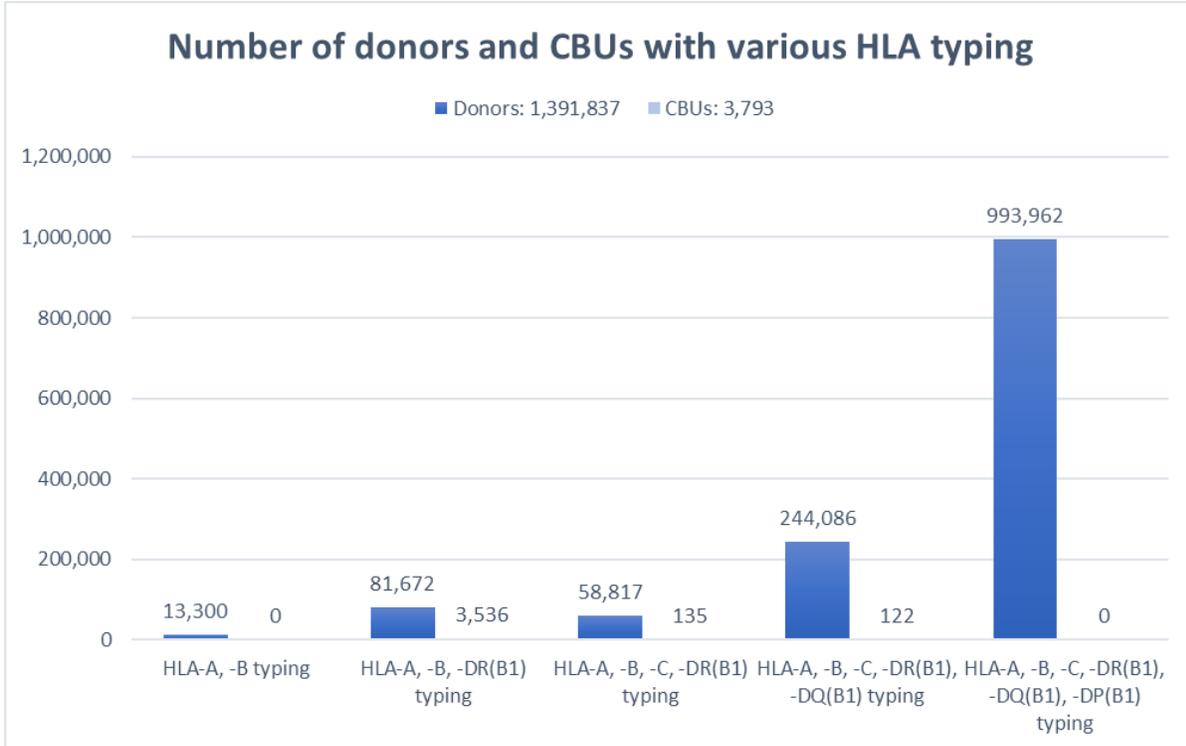
Number of donors and CBUs with various HLA typing

■ Donors: 1,391,837 ■ CBUs: 3,793

HLA typing	Donors	CBUs
HLA-A, -B typing	13,300	0
HLA-A, -B, -DR(B1) typing	81,672	3,536
HLA-A, -B, -C, -DR(B1) typing	58,817	135
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	244,086	122
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	993,962	0

Adult volunteer donors/CBUs added to the database during 2017: **198,797**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	198,704	93
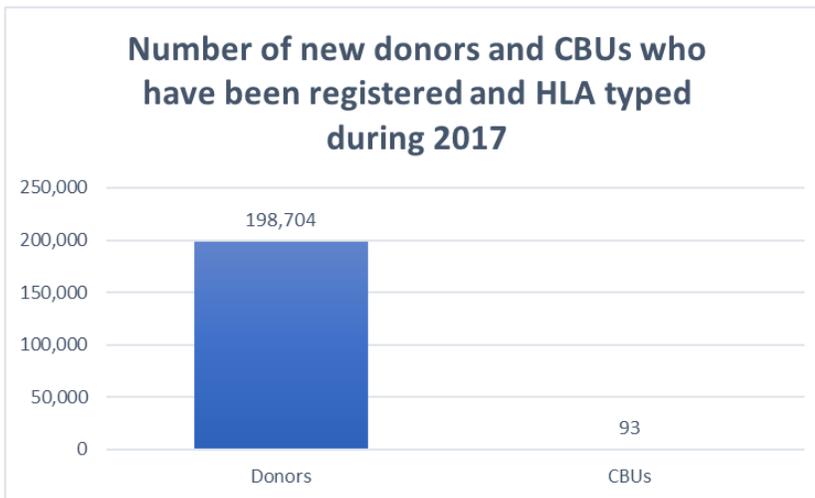
	BM	PBSC	CBU	DLI
National	23	250	0	15
Export to EU member states	77	487	0	55
Export to third countries	75	315	0	18
Import from EU member states	19	121	1	3
Import from third countries	2	21	0	0

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WMDA

Portugal

Number of registered and typed donors/CBUs on December 31st, 2017: **397,521**
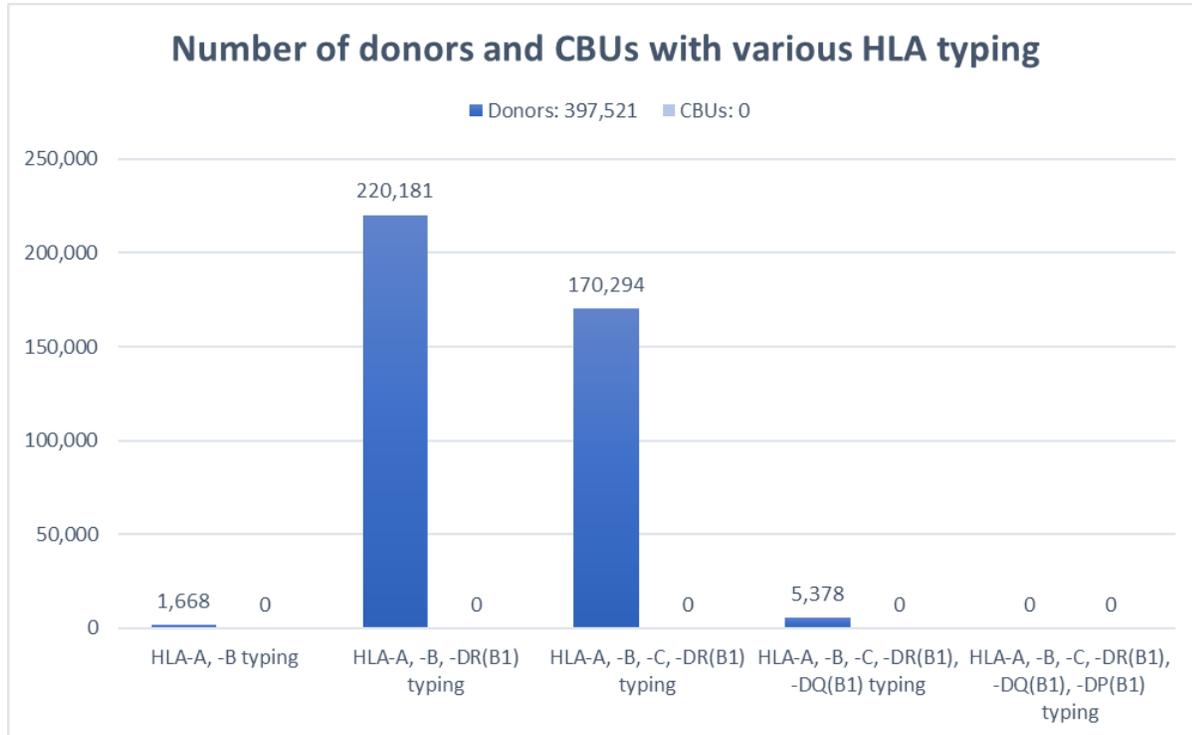
Number of donors and CBUs with various HLA typing

Donors: 397,521 ■ CBUs: 0

Adult volunteer donors/CBUs added to the database during 2017: **4,595**

Number of new donors and CBUs who have been registered and HLA typed during 2017
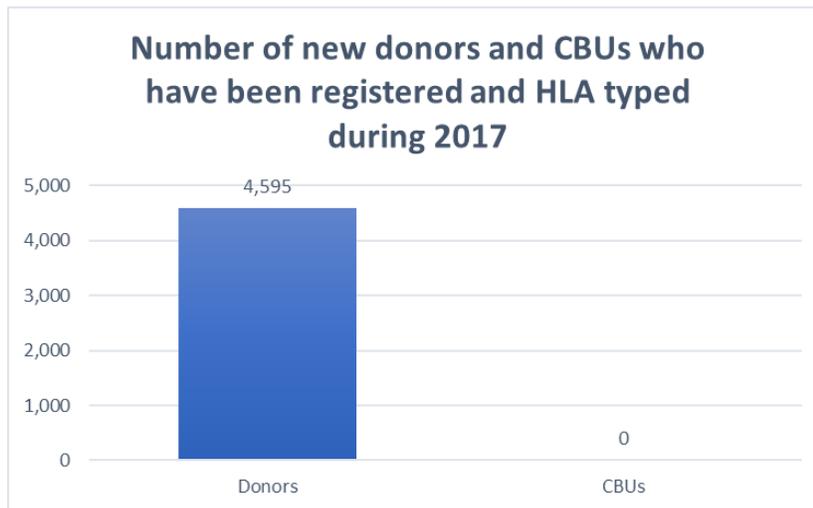
	BM	PBSC	CBU	DLI
National	8	32	-	0
Export to EU member states	4	26	-	5
Export to third countries	6	13	-	0
Import from EU member states	10	22	0	3
Import from third countries	4	4	1	0

WMDA

Romania

Number of registered and typed donors/CBUs on December 31st, 2017: **29,067**
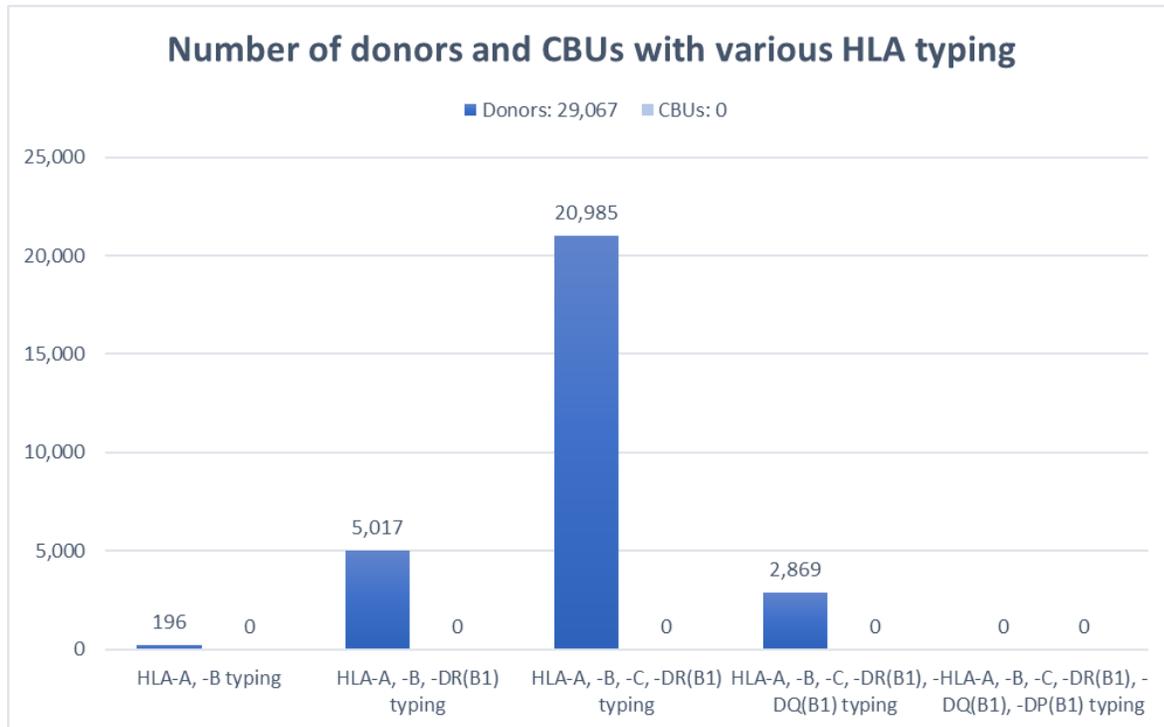
Number of donors and CBUs with various HLA typing

■ Donors: 29,067   ■ CBUs: 0

HLA typing category	Donors	CBUs
HLA-A, -B typing	196	0
HLA-A, -B, -DR(B1) typing	5,017	0
HLA-A, -B, -C, -DR(B1) typing	20,985	0
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	2,869	0
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	0	0

Adult volunteer donors/CBUs added to the database during 2017: **6,777**

Number of new donors and CBUs who have been registered and HLA typed during 2017
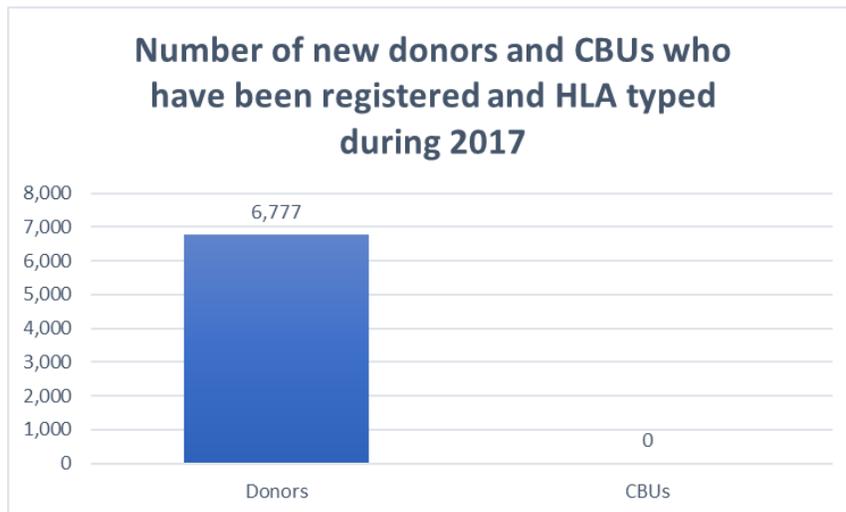
	Donors	CBUs
	6,777	0

	BM	PBSC	CBU	DLI
National	0	1	-	0
Export to EU member states	1	2	-	0
Export to third countries	0	0	-	0
Import from EU member states	1	33	0	2
Import from third countries	0	1	0	0

WMDA
Slovakia

Number of registered and typed donors/CBUs on December 31st, 2017:   **14,964**
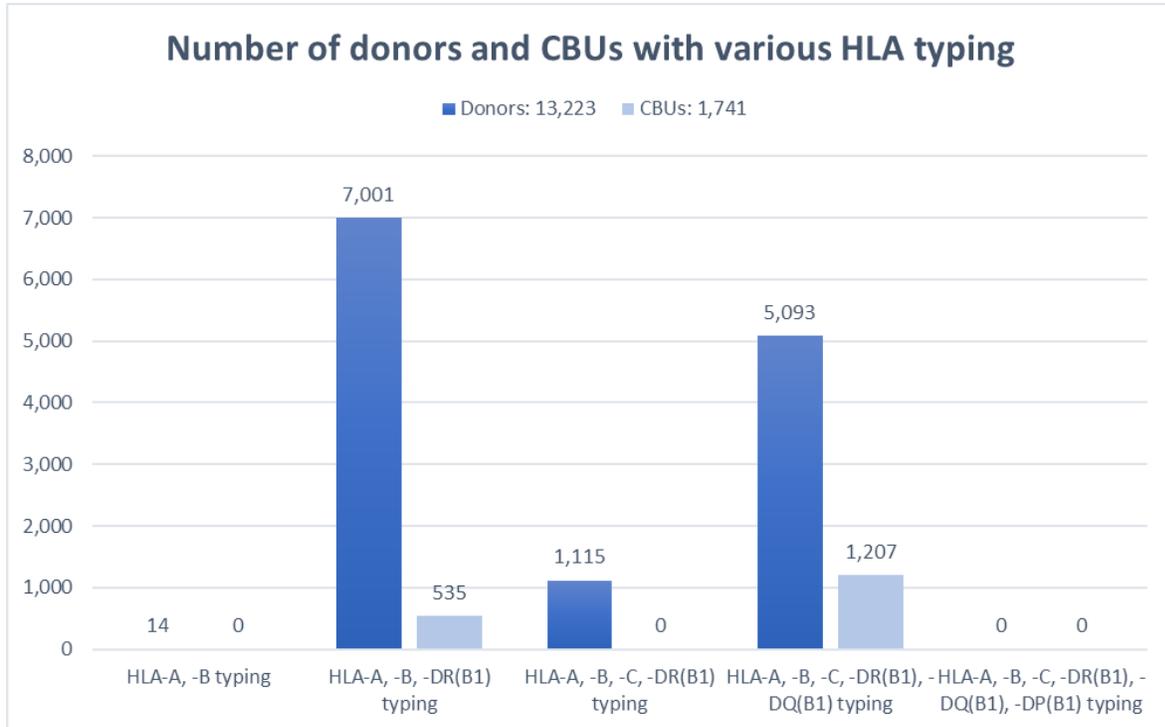
Number of donors and CBUs with various HLA typing

■ Donors: 13,223   ■ CBUs: 1,741

HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing
14 / 0	7,001 / 535	1,115 / 0	5,093 / 1,207	0 / 0

Adult volunteer donors/CBUs added to the database during 2017:   **2,753**

Number of new donors and CBUs who have been registered and HLA typed during 2017
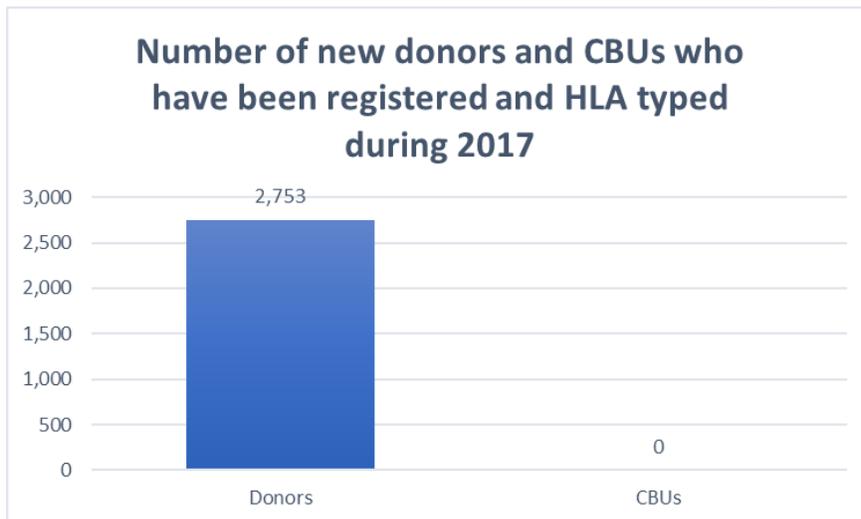
Donors	CBUs
2,753	0

	BM	PBSC	CBU	DLI
National	0	1	0	0
Export to EU member states	0	0	3	0
Export to third countries	0	1	0	0
Import from EU member states	8	34	0	0
Import from third countries	0	2	0	0

WMDA

Slovenia

Number of registered and typed donors/CBUs on December 31st, 2017: **17,622**
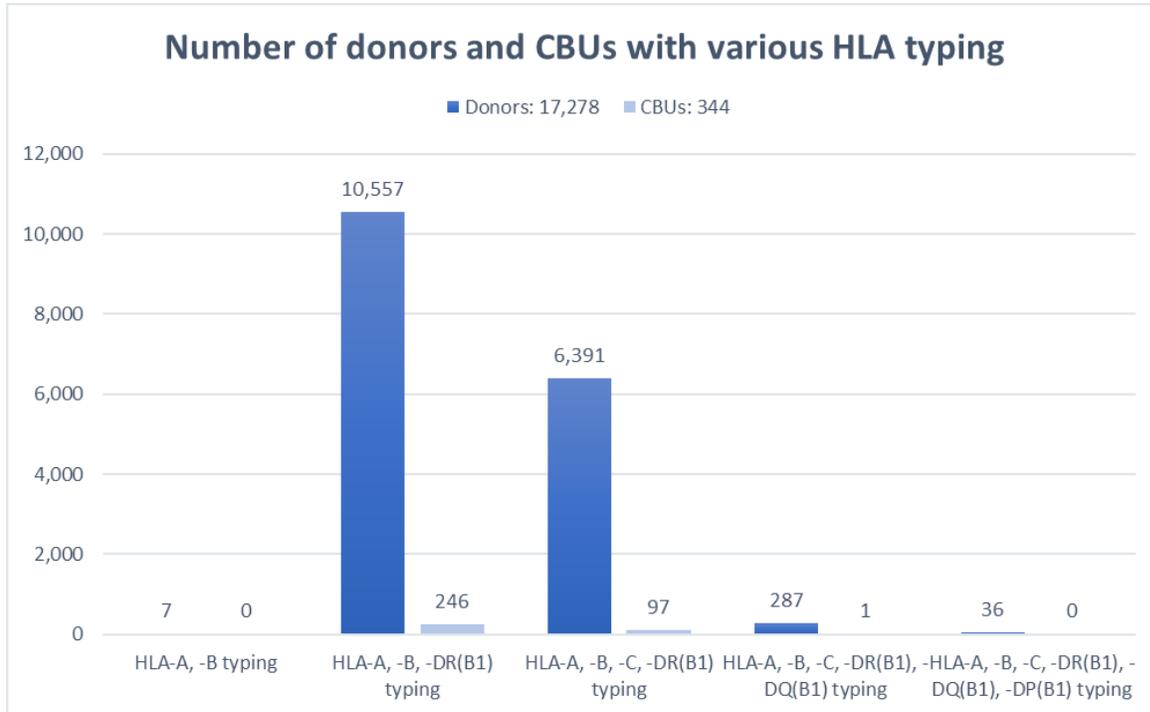
Number of donors and CBUs with various HLA typing

■ Donors: 17,278   ■ CBUs: 344

HLA typing	Donors	CBUs
HLA-A, -B typing	7	0
HLA-A, -B, -DR(B1) typing	10,557	246
HLA-A, -B, -C, -DR(B1) typing	6,391	97
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	287	1
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	36	0

Adult volunteer donors/CBUs added to the database during 2017: **636**

Number of new donors and CBUs who have been registered and HLA typed during 2017
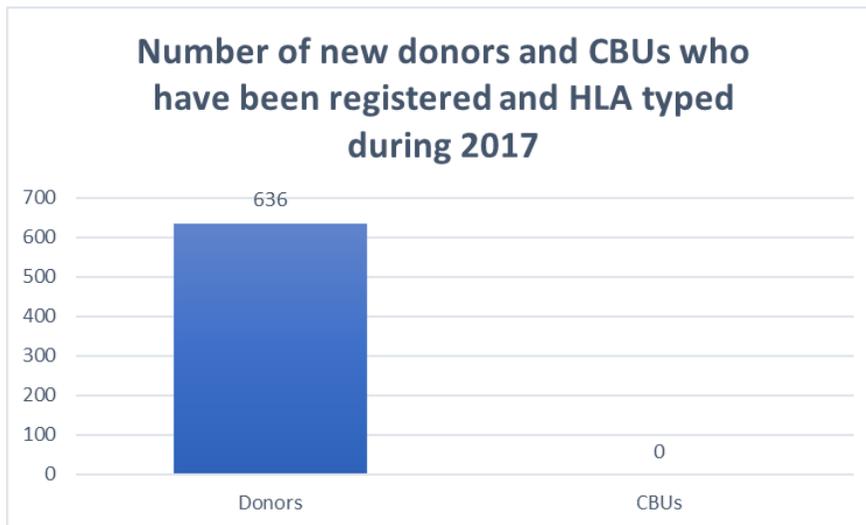
	Donors	CBUs
	636	0

	BM	PBSC	CBU	DLI
National	0	1	0	0
Export to EU member states	0	1	0	0
Export to third countries	0	2	0	0
Import from EU member states	0	24	1	1
Import from third countries	0	2	1	1

WMDA

Spain

Number of registered and typed donors/CBUs on December 31st, 2017: **387,685**
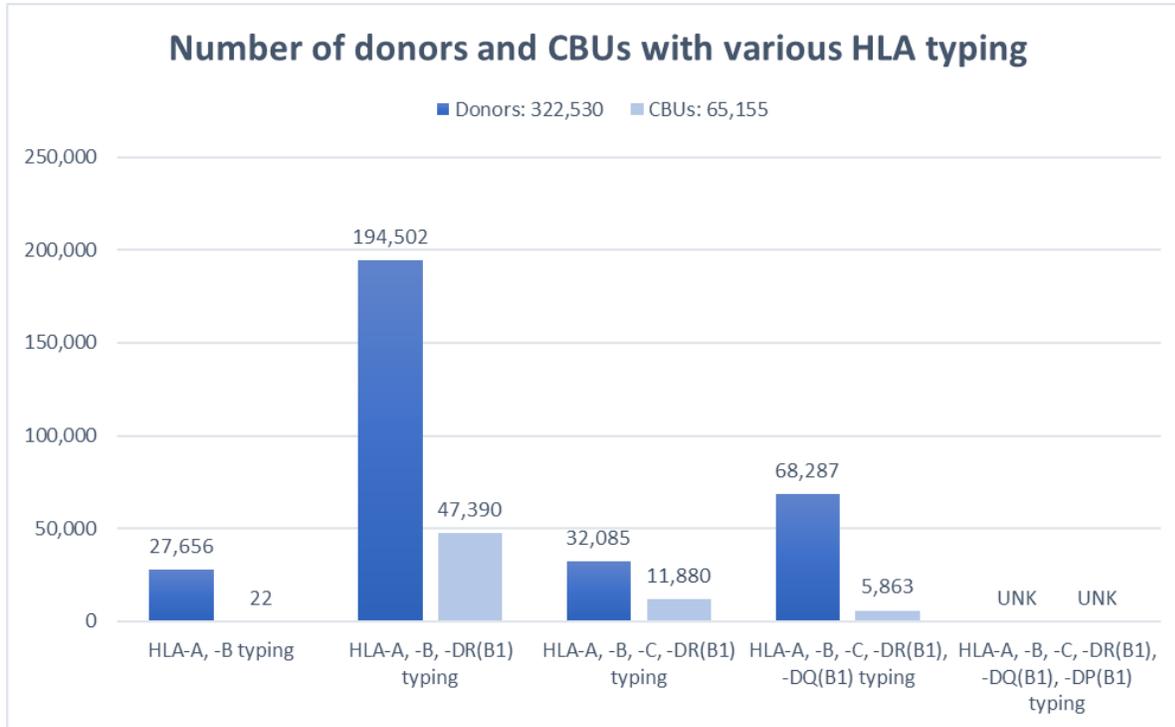
Number of donors and CBUs with various HLA typing

■ Donors: 322,530 ■ CBUs: 65,155

HLA-A, -B typing	HLA-A, -B, -DR(B1) typing	HLA-A, -B, -C, -DR(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing
27,656	194,502	32,085	68,287	UNK
22	47,390	11,880	5,863	UNK

Adult volunteer donors/CBUs added to the database during 2017: **79,873**

Number of new donors and CBUs who have been registered and HLA typed during 2017

Donors	CBUs
78,291	1,582
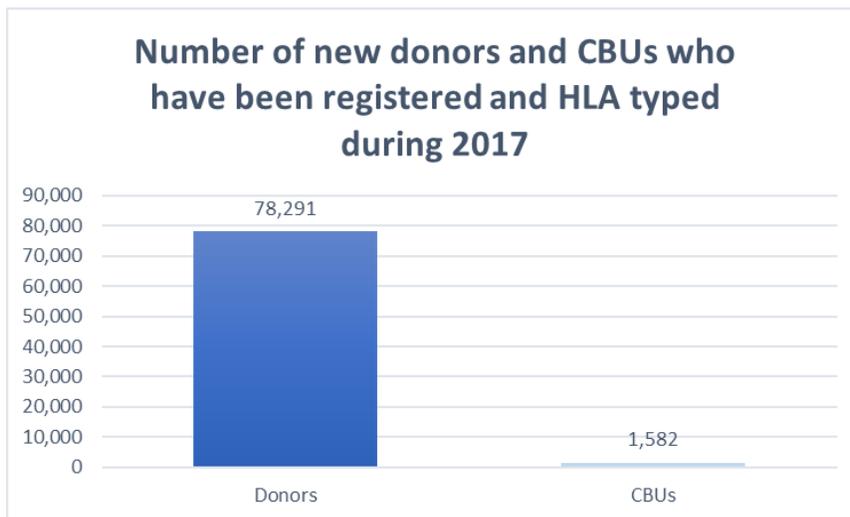
	BM	PBSC	CBU	DLI
National	14	69	21	1
Export to EU member states	8	31	53	1
Export to third countries	3	21	103	0
Import from EU member states	46	200	11	12
Import from third countries	14	81	15	2

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WMDA

Sweden

Number of registered and typed donors/CBUs on December 31st, 2017:   **105,298**
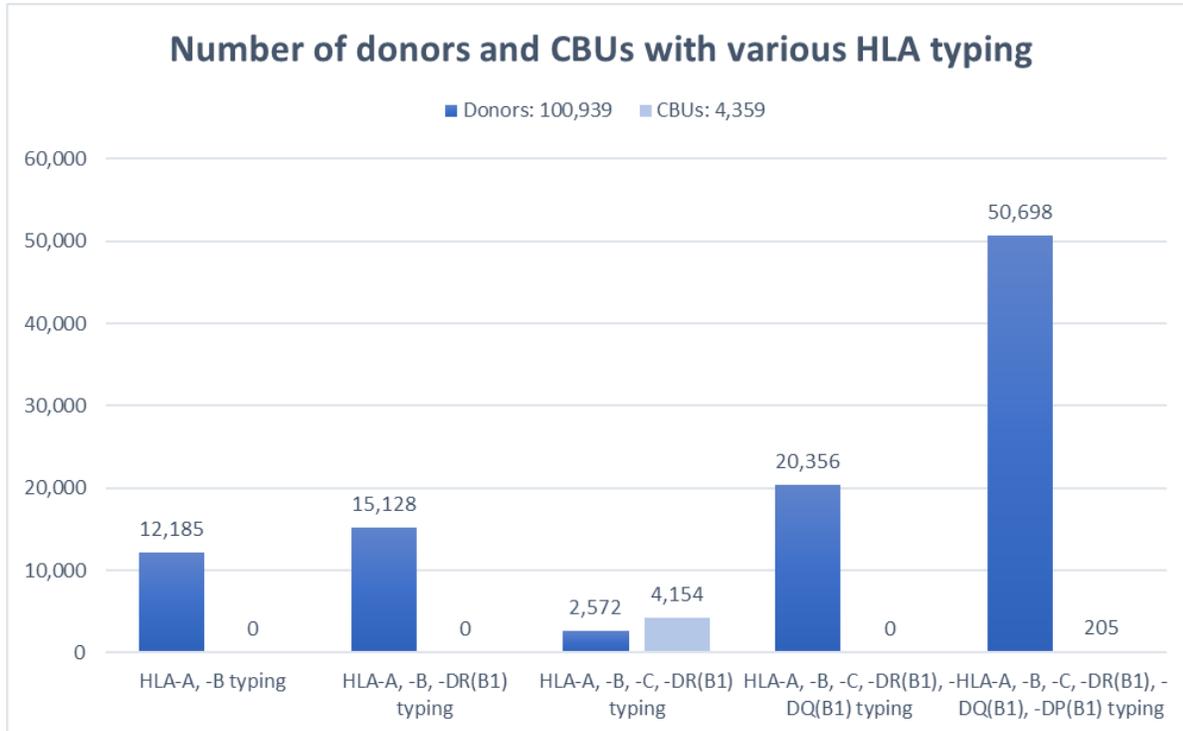
Number of donors and CBUs with various HLA typing

■ Donors: 100,939   ■ CBUs: 4,359

HLA typing	Donors	CBUs
HLA-A, -B typing	12,185	0
HLA-A, -B, -DR(B1) typing	15,128	0
HLA-A, -B, -C, -DR(B1) typing	2,572	4,154
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	20,356	0
-HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	50,698	205

Adult volunteer donors/CBUs added to the database during 2017:   **28,651**

Number of new donors and CBUs who have been registered and HLA typed during 2017

	Donors	CBUs
	28,618	1033
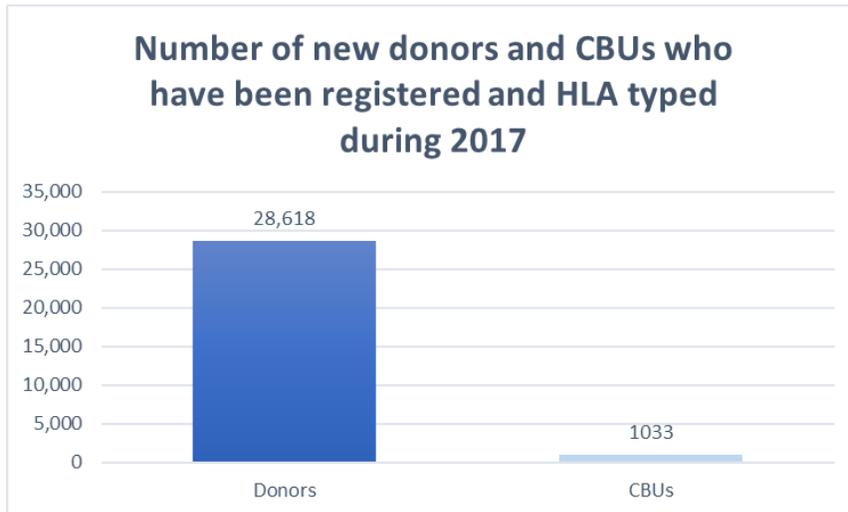
	BM	PBSC	CBU	DLI
National	0	31	0	2
Export to EU member states	3	15	5	0
Export to third countries	2	14	4	1
Import from EU member states	26	117	0	7
Import from third countries	8	17	1	0

⬤WMDA

United Kingdom

Number of registered and typed donors/CBUs on December 31st, 2017: **1,469,399**
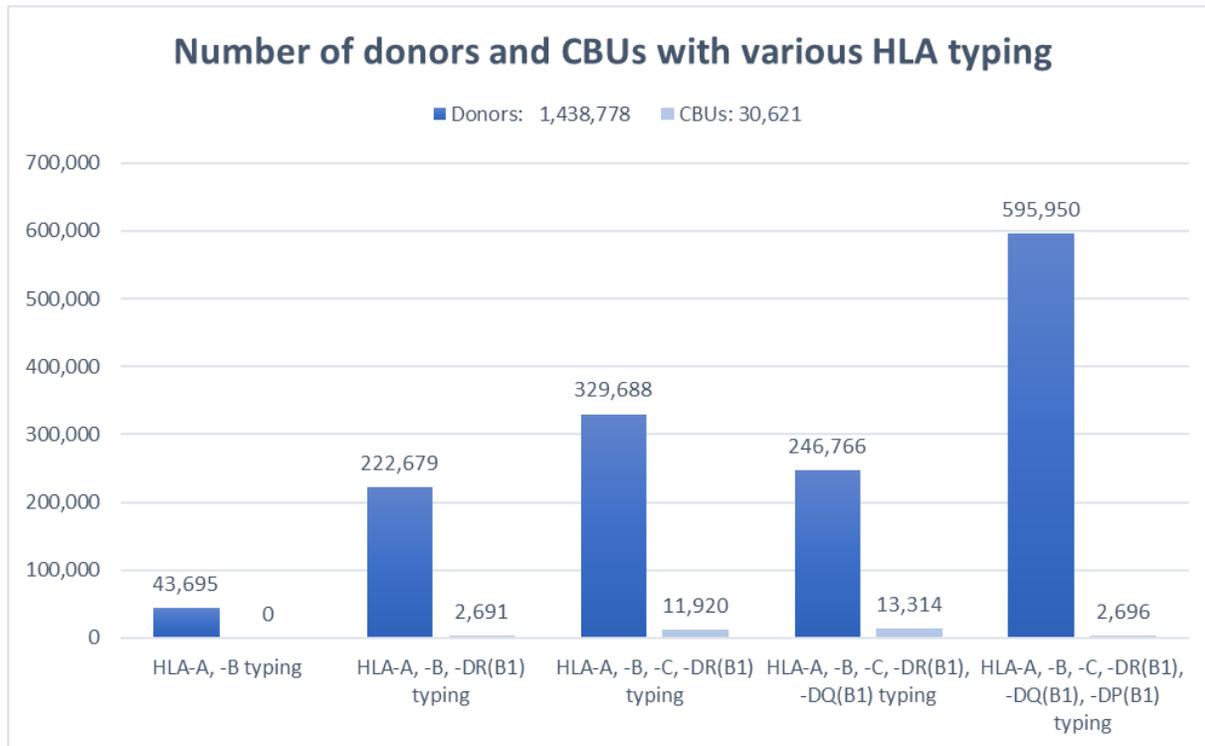
Number of donors and CBUs with various HLA typing

■ Donors: 1,438,778   ■ CBUs: 30,621

HLA typing	Donors	CBUs
HLA-A, -B typing	43,695	0
HLA-A, -B, -DR(B1) typing	222,679	2,691
HLA-A, -B, -C, -DR(B1) typing	329,688	11,920
HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	246,766	13,314
HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	595,950	2,696

Adult volunteer donors/CBUs added to the database during 2017: **166,014**

Number of new donors and CBUs who have been registered and HLA typed during 2017

Donors: 163,490
CBUs: 2,524
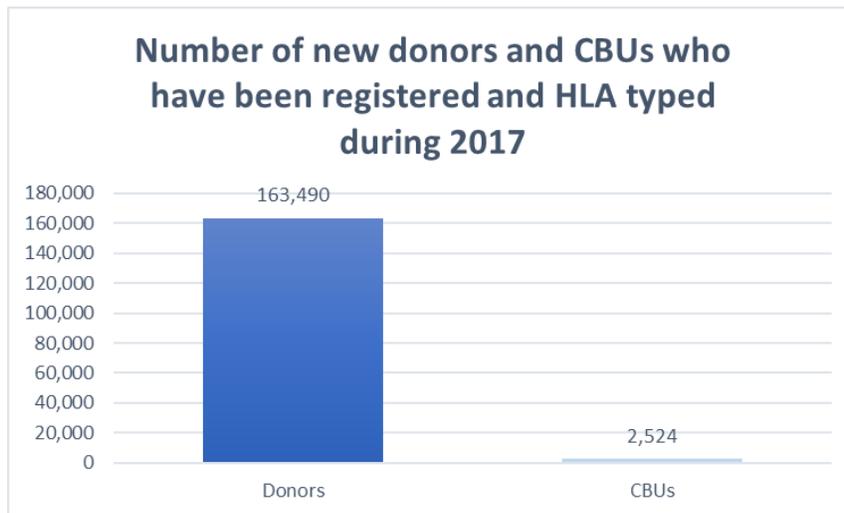
	BM	PBSC	CBU	DLI
National	49	392	28	59
Export to EU member states	36	217	19	23
Export to third countries	77	292	46	8
Import from EU member states	63	392	28	59
Import from third countries	22	116	44	7

WMDA

Appendix 1: List of countries that export to EU member states

- Argentina

- Australia

- Brazil

- Canada

- China

- India

- Iran

- Israel

- Japan

- Korea

- Norway

- Russia

- Singapore

- South Africa

- Switzerland

- Taiwan – province of China

- Thailand

- Turkey

- United States of America

Appendix 2: WMDA Questionnaire

➡ QUESTIONNAIRE

Online Questionnaire - **Year 2017**	blank questionnaire in PDF

NOTE: *Please do not fill in the green boxes, these boxes will be automatically calculated based on your response.*
- *Only fill out 0 if the answer is 0*
- *If the answer is unknown, fill out UNK*
- *If the answer is not applicable, fill out NA*
- *It is not possible to leave any answers blanc (except for the country list)*

General registry and cord blood registry/bank data	hide questionnaire
1) Number of registered and typed donors/CBUs on December 31 2017 (*please give number of donors/CBUs with specific HLA typing profile regardless of HLA typing resolution, please list a donor/CBU only once*)	
1a) Number of adult volunteer donors (*all donors*)	
1a1) Number of donors with HLA-A, -B typing	
1a2) Number of donors with HLA-A, -B, -DR(*B1*) typing	
1a3) Number of donors with HLA-A, -B, -C, -DR(*B1*) typing	
1a4) Number of donors with HLA-A, -B, -C, -DR(*B1*), -DQ(*B1*) typing	
1a5) Number of donors with HLA-A, -B, -C, -DR(*B1*), -DQ(*B1*), -DP(*B1*) typing	
1b) Number of HLA typed CBUs available for transplantation for unrelated patients	
1b1) Number of CBUs with HLA-A, -B typing	
1b2) Number of CBUs with HLA-A, -B, -DR(*B1*) typing	
1b3) Number of CBUs with HLA-A, -B, -C, -DR(*B1*) typing	
1b4) Number of CBUs with HLA-A, -B, -C, -DR(*B1*), -DQ(*B1*) typing	
1b5) Number of CBUs with HLA-A, -B, -C, -DR(*B1*), -DQ(*B1*), -DP(*B1*) typing	

Adult volunteer donors/CBUs added to the database during 2017	hide questionnaire
2) Count all new donors/CBUs recruited and HLA typed during 2017	
2a) Count the donors who have been registered and HLA typed during 2017	
2b) Count the number of new HLA typed CBUs added during 2017	

Distribution of HPC products shipped to various countries for unrelated transplantation during 2017

Number of HPC products provided by your donors shipped to international patients for unrelated transplantation

47) HPC-Marrow (*international*)

48) HPC-Apheresis (*international*)

49) HPC-Cord (*international*)

50) DLI (*international*)

Number of HPC products provided by your donors shipped to national patients for unrelated transplantation

51) HPC-Marrow (*national*)

52) HPC-Apheresis (*national*)

53) HPC-Cord (*national*)

54) DLI (*national*)

Number of HPC products provided by your donors shipped to the following countries for unrelated transplantation

55) HPC-Marrow shipped to the following countries

Own country

Afghanistan

Argentina

Armenia

Australia

Austria

Belarus	
Belgium	
Brazil	
Bulgaria	
Canada	
Chile	
China	
China Hong Kong	
Colombia	
Costa Rica	
Croatia	
Cuba	
Cyprus	
Czech Republic	
Denmark	
Ecuador	
Egypt	
Estonia	
Finland	
France	

Georgia	
Germany	
Greece	
Hungary	
India	
Iran	
Ireland	
Israel	
Italy	
Japan	
Jordan	
Korea	
Latvia	
Liechtenstein	
Lithuania	
Malaysia	
Mexico	
Netherlands	
New Zealand	
Norway	
Oman	

Pakistan	
Philippines	
Poland	
Portugal	
Romania	
Russia	
San Marino	
Saudi Arabia	
Serbia	
Singapore	
Slovakia	
Slovenia	
South Africa	
Spain	
Sri Lanka	
Sweden	
Switzerland	
Taiwan, province of China	
Thailand	
Turkey	

United Kingdom	
United States	
Uruguay	
Venezuela	
Vietnam	
Please specify	No.:
	Text:

56) HPC-Apheresis shipped to the following countries

Own country	
Afghanistan	
Argentina	
Armenia	
Australia	
Austria	
Belarus	
Belgium	
Brazil	
Bulgaria	
Canada	
Chile	
China	

China Hong Kong	
Colombia	
Costa Rica	
Croatia	
Cuba	
Cyprus	
Czech Republic	
Denmark	
Ecuador	
Egypt	
Estonia	
Finland	
France	
Georgia	
Germany	
Greece	
Hungary	
India	
Iran	
Ireland	

Israel	
Italy	
Japan	
Jordan	
Korea	
Latvia	
Lebanon	
Liechtenstein	
Lithuania	
Malaysia	
Mexico	
Netherlands	
New Zealand	
Norway	
Oman	
Pakistan	
Philippines	
Poland	
Portugal	
Romania	
Russia	

San Marino	
Saudi Arabia	
Serbia	
Singapore	
Slovakia	
Slovenia	
South Africa	
Spain	
Sri Lanka	
Sweden	
Switzerland	
Taiwan, province of China	
Thailand	
Turkey	
United Kingdom	
United States	
Uruguay	
Venezuela	
Vietnam	

Please, specify country names

No.:

Text:

57) HPC-Cord shipped to the following countries

Own country	
Afghanistan	
Argentina	
Armenia	
Australia	
Austria	
Belarus	
Belgium	
Brazil	
Bulgaria	
Canada	
Chile	
China	
China Hong Kong	
Colombia	
Costa Rica	
Croatia	
Cuba	
Cyprus	

Czech Republic	
Denmark	
Ecuador	
Egypt	
Estonia	
Finland	
France	
Georgia	
Germany	
Greece	
Hungary	
India	
Iran	
Ireland	
Israel	
Italy	
Japan	
Jordan	
Korea	
Latvia	
Liechtenstein	

Lithuania	
Malaysia	
Mexico	
Netherlands	
New Zealand	
Norway	
Oman	
Pakistan	
Philippines	
Poland	
Portugal	
Romania	
Russia	
San Marino	
Saudi Arabia	
Serbia	
Singapore	
Slovakia	
Slovenia	
South Africa	
Spain	

Sri Lanka	
Sweden	
Switzerland	
Taiwan, province of China	
Thailand	
Turkey	
United Kingdom	
United States	
Uruguay	
Venezuela	
Vietnam	

Unknown, Please specify	No.:	
	Text:	

58) DLI shipped to the following countries

Own country	
Afghanistan	
Argentina	
Armenia	
Australia	
Austria	
Belarus	

Belgium	
Brazil	
Bulgaria	
Canada	
Chile	
China	
China Hong Kong	
Colombia	
Costa Rica	
Croatia	
Cuba	
Cyprus	
Czech Republic	
Denmark	
Egypt	
Equador	
Estonia	
Finland	
France	
Georgia	
Germany	

Greece	
Hungary	
India	
Iran	
Ireland	
Israel	
Italy	
Japan	
Jordan	
Korea	
Latvia	
Liechtenstein	
Lithuania	
Malaysia	
Mexico	
Netherlands	
New Zealand	
Norway	
Oman	
Pakistan	

Philippines	
Poland	
Portugal	
Romania	
Russia	
San Marino	
Saudi Arabia	
Serbia	
Singapore	
Slovakia	
Slovenia	
South Africa	
Spain	
Srilanka	
Sweden	
Switzerland	
Taiwan	
Thailand	
Turkey	
United Kingdom	
United States	
Uruguay	
Venezuela	
Vietnam	
Unknown	

Appendix 3: Global Trends 1997 - 2017

The Global Trends movie with a summary of all the achievements over the past 20 years can be viewed via the following website:

https://drive.google.com/file/d/1RsoIj-JMkBMBfDAmvXL29QinmB_9Nsnf/view

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8.   Images of countries by This Photo by Unknown Author is licensed under CC BY-SA (Word Office)