

**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**

**Grant Agreement number:** 785270  
**Project acronym:** SAVDON  
**Work Package number:** WP1

**Periodic report:** 1st  2nd  3rd  4th

**Period covered:** from 01<sup>st</sup> January to 31<sup>st</sup> December 2017

**Organisation:** **World Marrow Donor Association (WMDA)**  
**LEAR:** Esther Pustjens  
**Project coordinator:** Lydia Foeken  
**Tel:** 0031 88 505 7900  
**E-mail:** [lydia.foeken@wmda.info](mailto:lydia.foeken@wmda.info)  
**Organisation website address:** [www.wmda.info](http://www.wmda.info)

# Table of Contents

Abbreviations .....	2
Executive Summary .....	3
Introduction.....	4
Blood stem cell transplantation .....	4
HLA matching .....	5
Global network.....	5
Import / export.....	5
Questionnaire.....	6
<b>Austria .....</b>	<b>7</b>
<b>Belgium .....</b>	<b>8</b>
<b>Bulgaria .....</b>	<b>9</b>
<b>Croatia .....</b>	<b>10</b>
<b>Cyprus.....</b>	<b>11</b>
<b>Czech Republic .....</b>	<b>12</b>
<b>Denmark.....</b>	<b>13</b>
<b>Finland.....</b>	<b>14</b>
<b>France.....</b>	<b>15</b>
<b>Germany.....</b>	<b>16</b>
<b>Greece .....</b>	<b>17</b>
<b>Hungary .....</b>	<b>18</b>
<b>Ireland .....</b>	<b>19</b>
<b>Italy.....</b>	<b>20</b>
<b>Lithuania .....</b>	<b>21</b>
<b>Luxembourg .....</b>	<b>22</b>
<b>Netherlands .....</b>	<b>23</b>
<b>Poland .....</b>	<b>24</b>
<b>Portugal.....</b>	<b>25</b>
<b>Romania .....</b>	<b>26</b>
<b>Slovakia .....</b>	<b>27</b>
<b>Slovenia.....</b>	<b>28</b>
<b>Spain.....</b>	<b>29</b>
<b>Sweden.....</b>	<b>30</b>

<b>United Kingdom</b> .....	31
Appendix 1: List of countries that export to EU member states.....	32
Appendix 2: WMDA Questionnaire .....	33
Appendix 3: Global Trends 1997 - 2017 .....	49
References.....	50

## 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 were 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 your 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). GVHD 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.

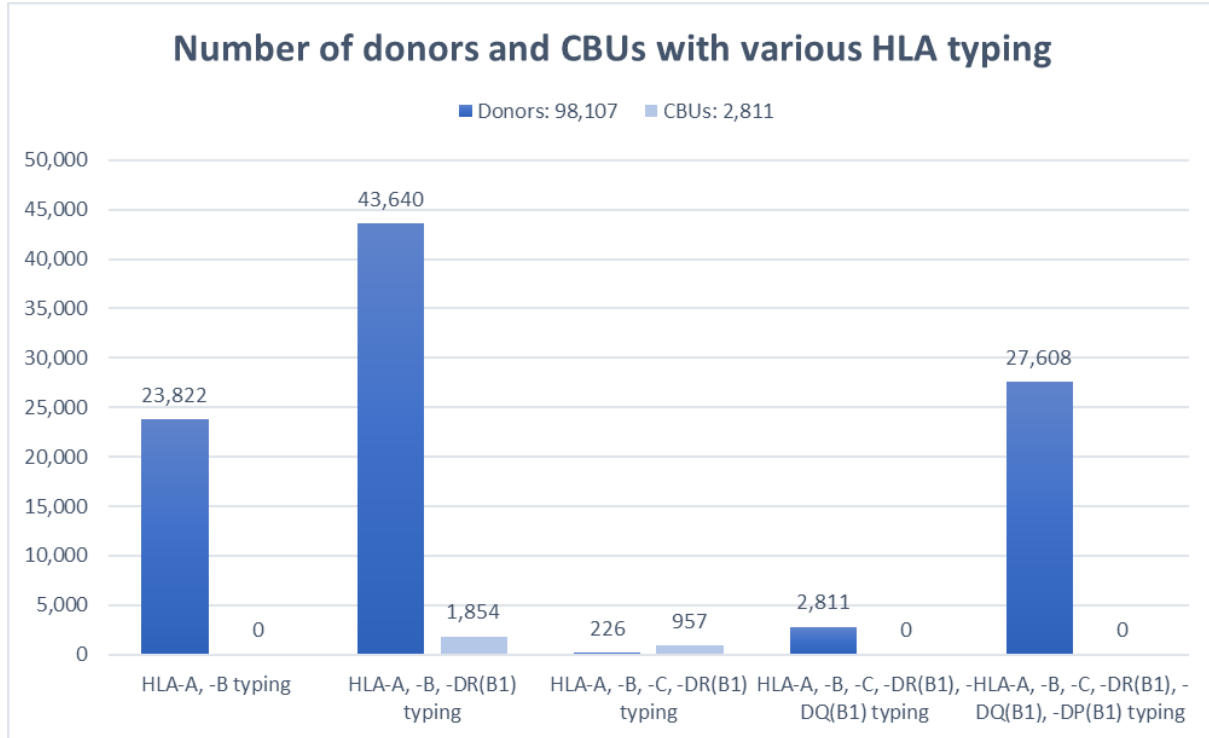
The following pages show the report per EU member state including the import and export data of the different stem cell products.

# Austria



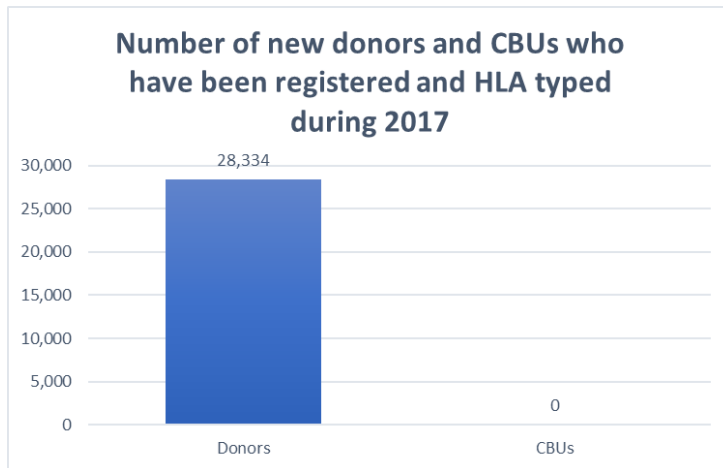
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**100,918**



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

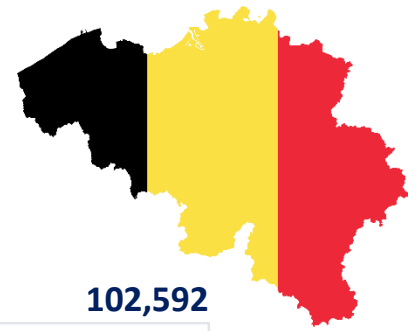
**28,334**



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

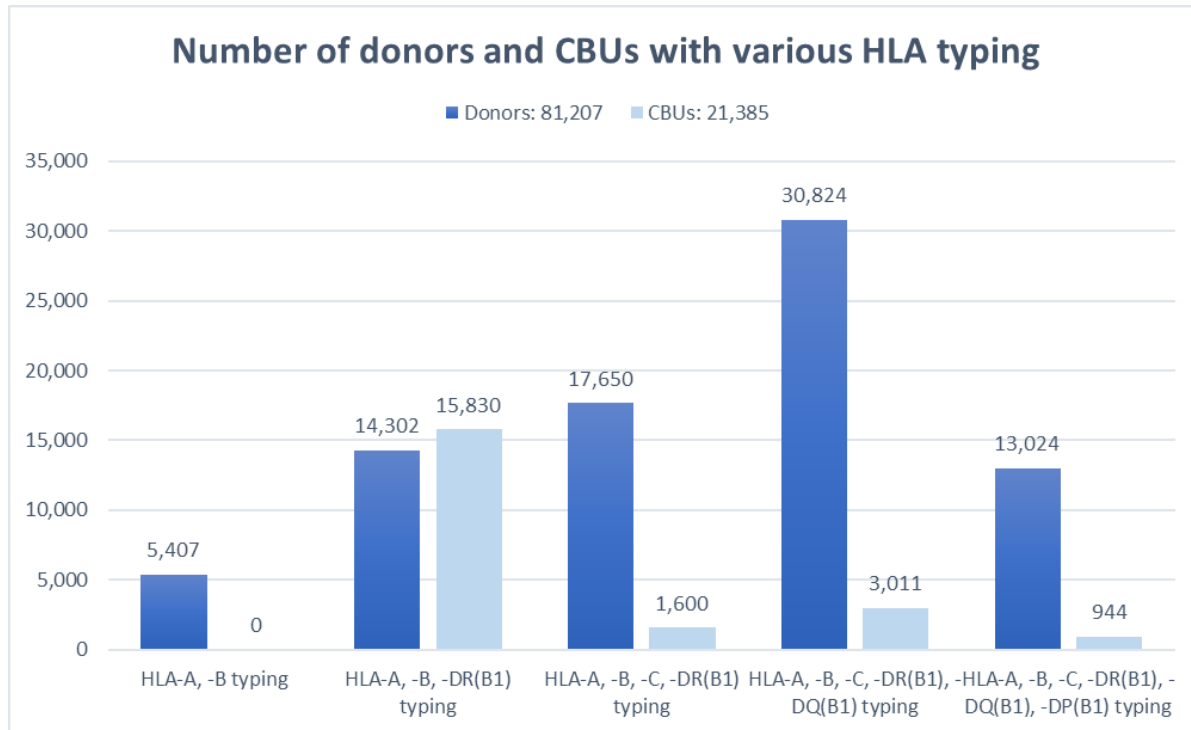


# Belgium



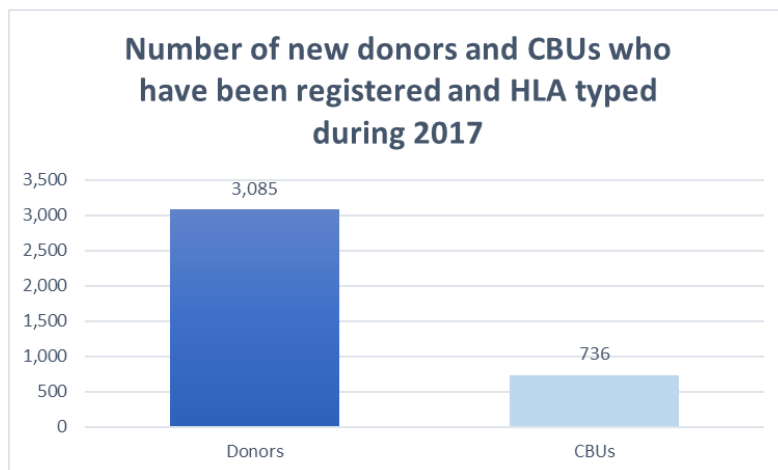
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**102,592**



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

**3,821**



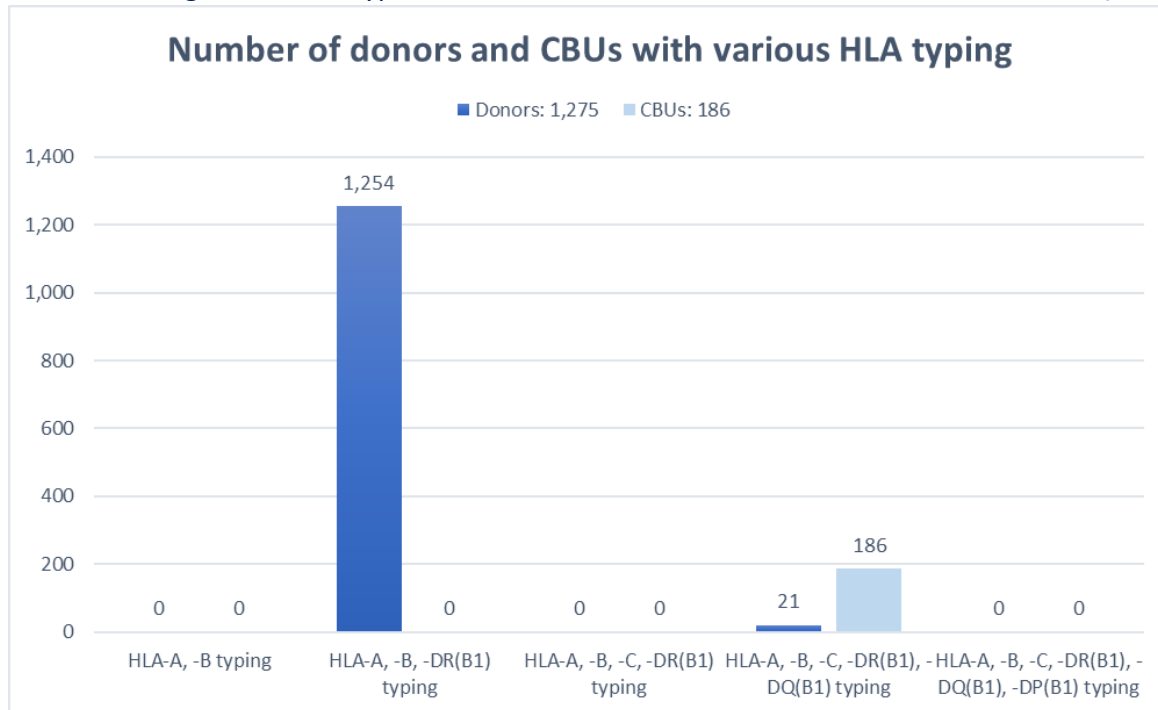
	BM	PBSC	CBU	DLI
<b>National</b>	0	9	3	1
<b>Export to EU member states</b>	1	21	10	3
<b>Export to third countries</b>	1	2	2	0
<b>Import from EU member states</b>	21	155	5	24
<b>Import from third countries</b>	4	36	3	5



# Bulgaria

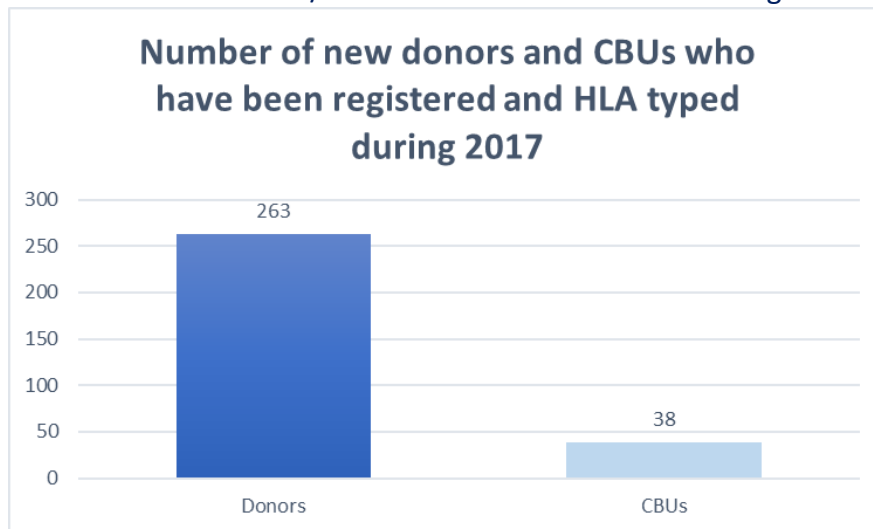
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**1,461**



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

**263**



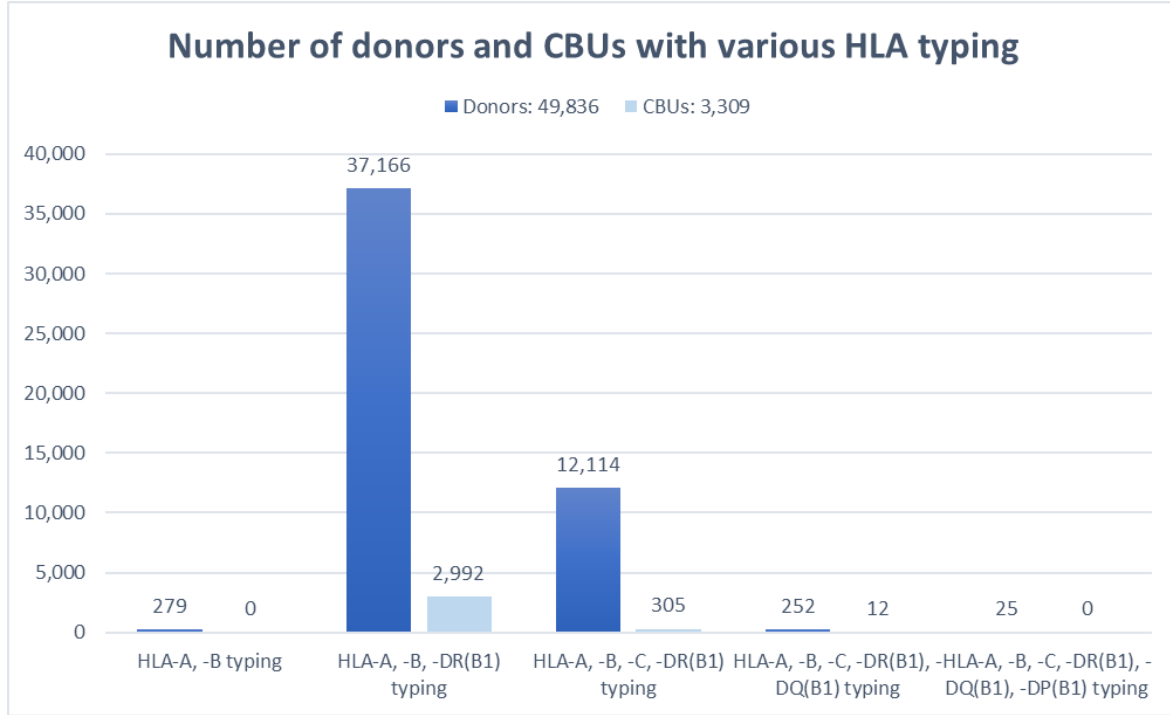
	BM	PBSC	CBU	DLI
<b>National</b>	0	0	-	0
<b>Export to EU member states</b>	0	0	-	0
<b>Export to third countries</b>	0	0	-	0
<b>Import from EU member states</b>	6	15	-	0
<b>Import from third countries</b>	0	1	-	0



# Croatia

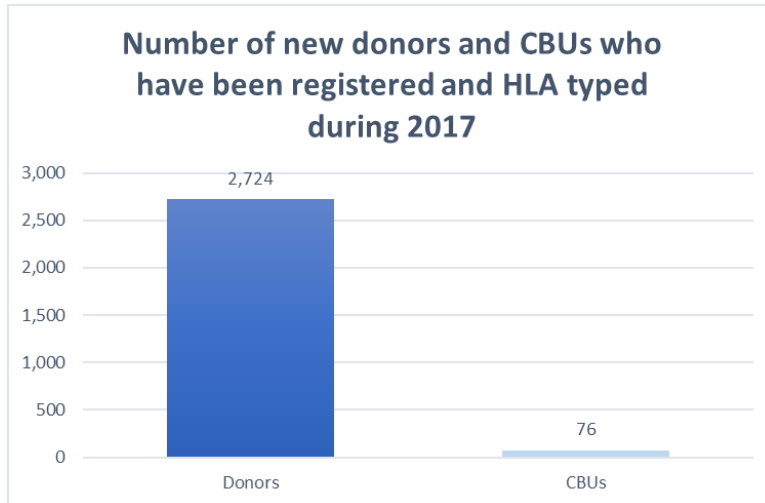
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**53,145**



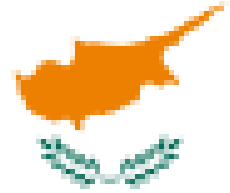
Adult volunteer donors/CBUs added to the database during 2017:

**2,800**



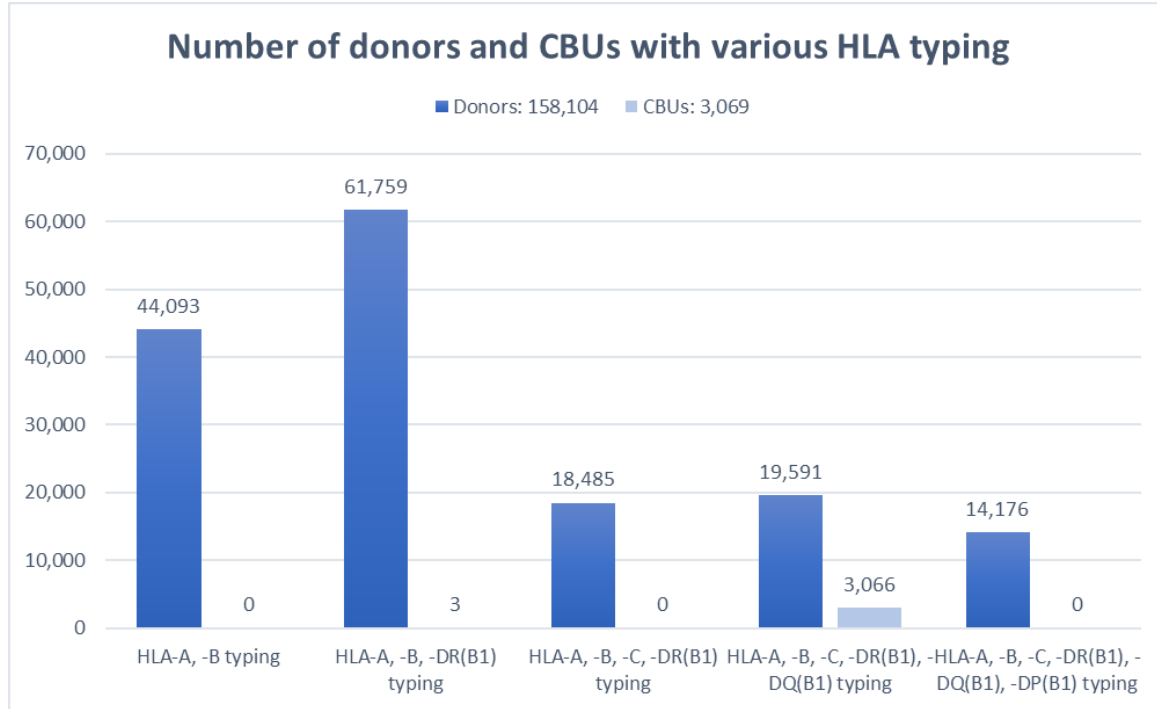
	BM	PBSC	CBU	DLI
<b>National</b>	1	12	0	0
<b>Export to EU member states</b>	1	0	0	0
<b>Export to third countries</b>	1	0	1	0
<b>Import from EU member states</b>	7	22	0	2
<b>Import from third countries</b>	1	2	0	0

# Cyprus



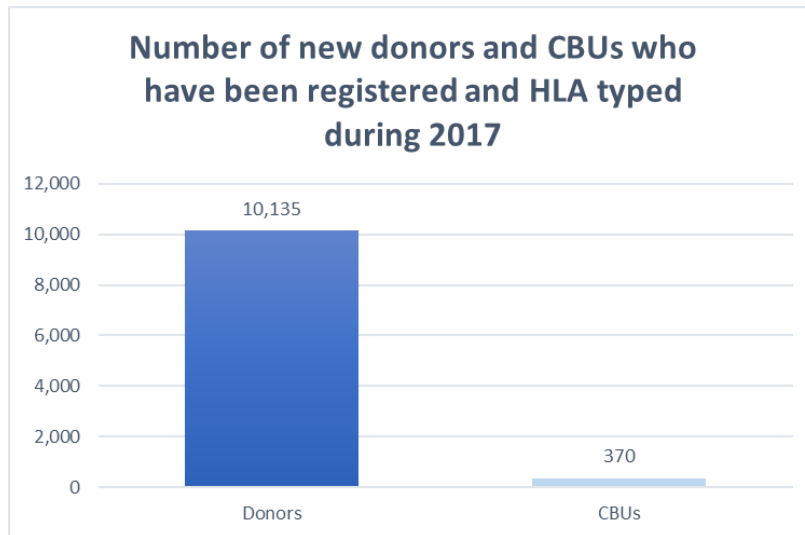
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**161,173**



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

**10,505**



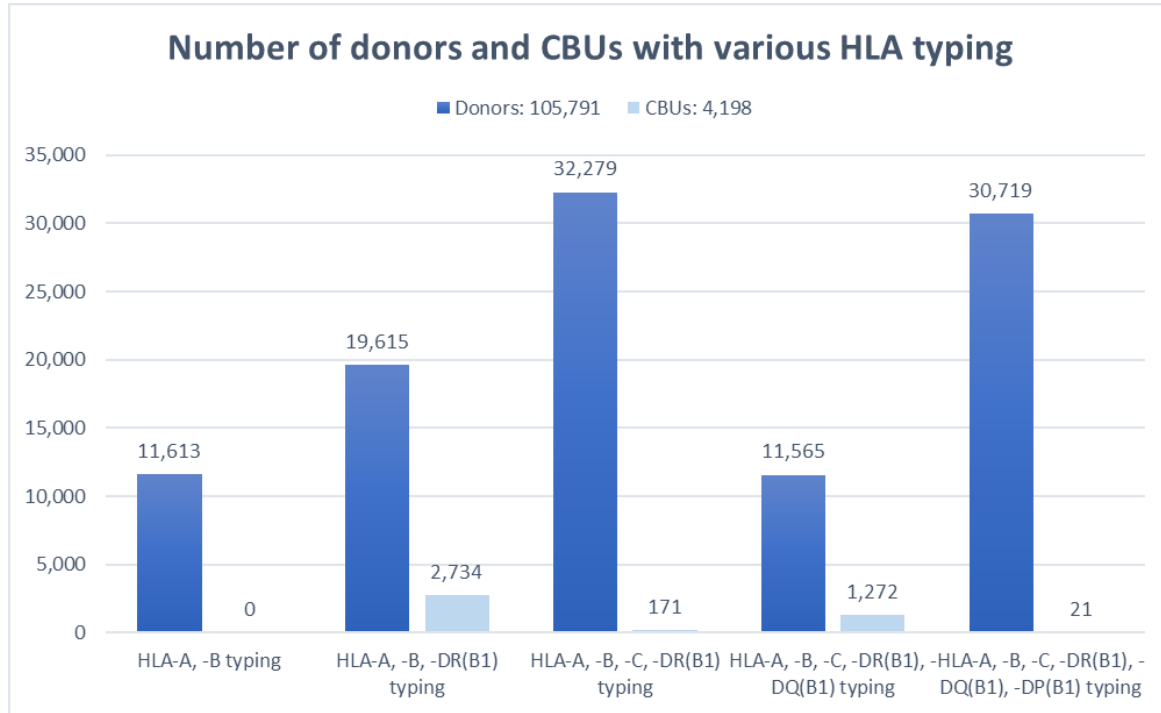
	BM	PBSC	CBU	DLI
<b>National</b>	2	7	0	1
<b>Export to EU member states</b>	1	23	0	1
<b>Export to third countries</b>	1	18	0	1
<b>Import from EU member states</b>	0	0	0	0
<b>Import from third countries</b>	0	0	0	0

# Czech Republic



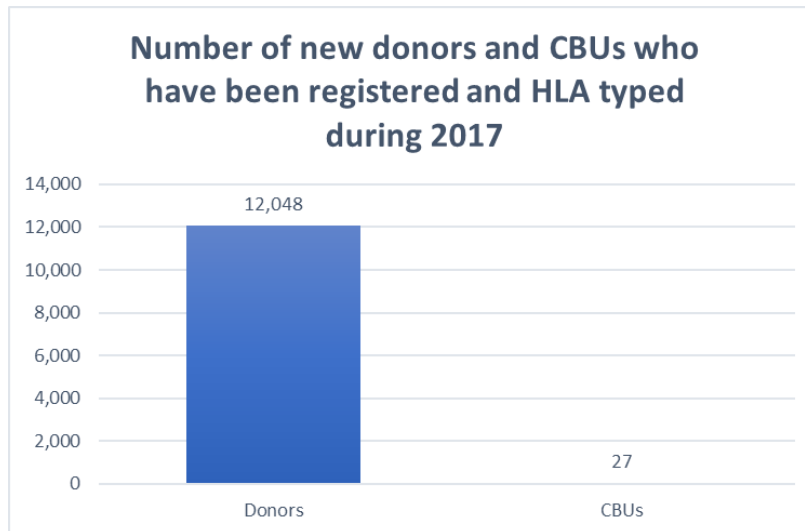
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**109,989**



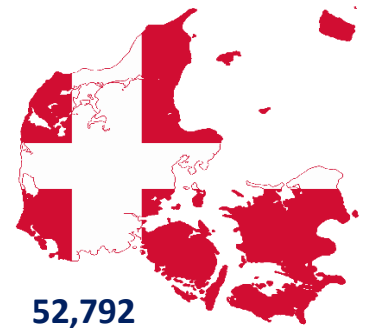
Adult volunteer donors/CBUs added to the database during 2017:

**12,075**



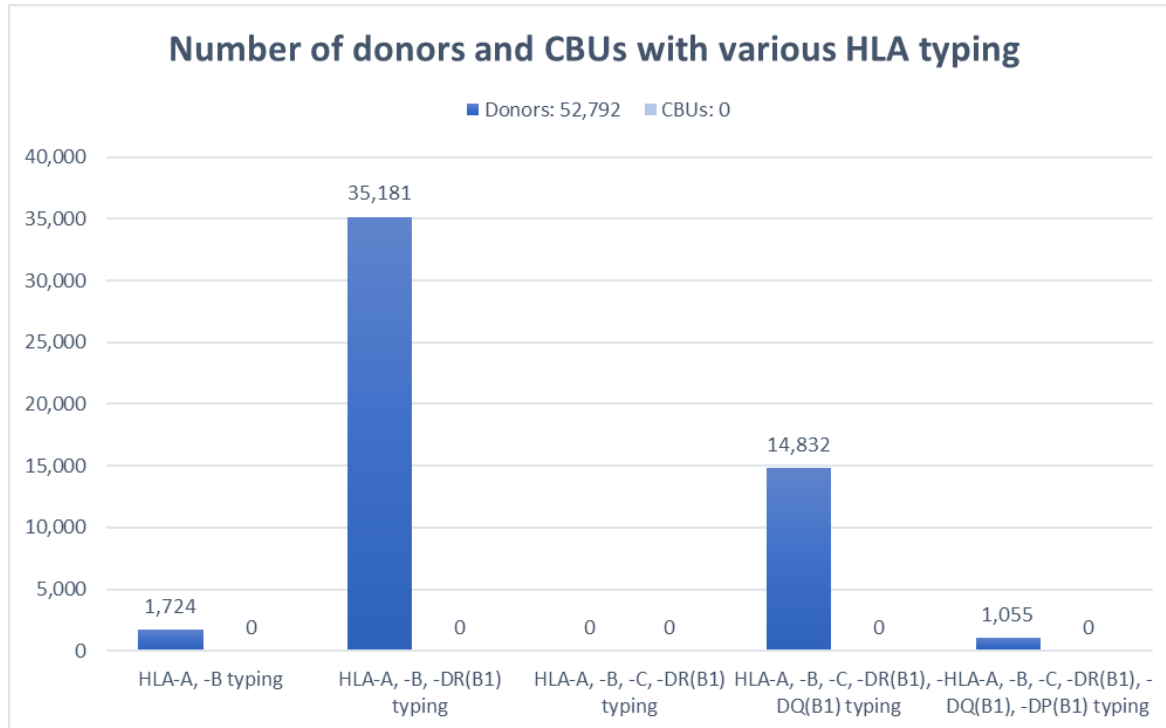
	BM	PBSC	CBU	DLI
<b>National</b>	4	24	1	7
<b>Export to EU member states</b>	3	5	0	1
<b>Export to third countries</b>	2	2	0	1
<b>Import from EU member states</b>	12	106	0	12
<b>Import from third countries</b>	1	10	0	2

# Denmark



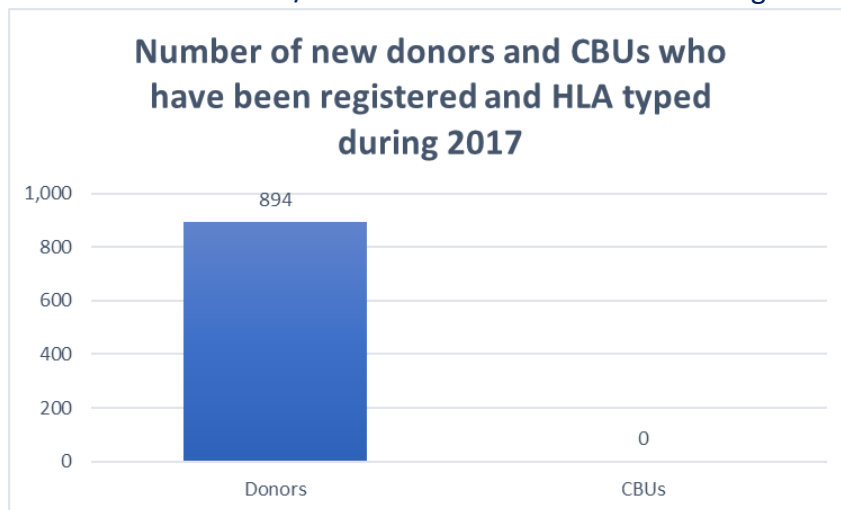
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**52,792**



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

**894**



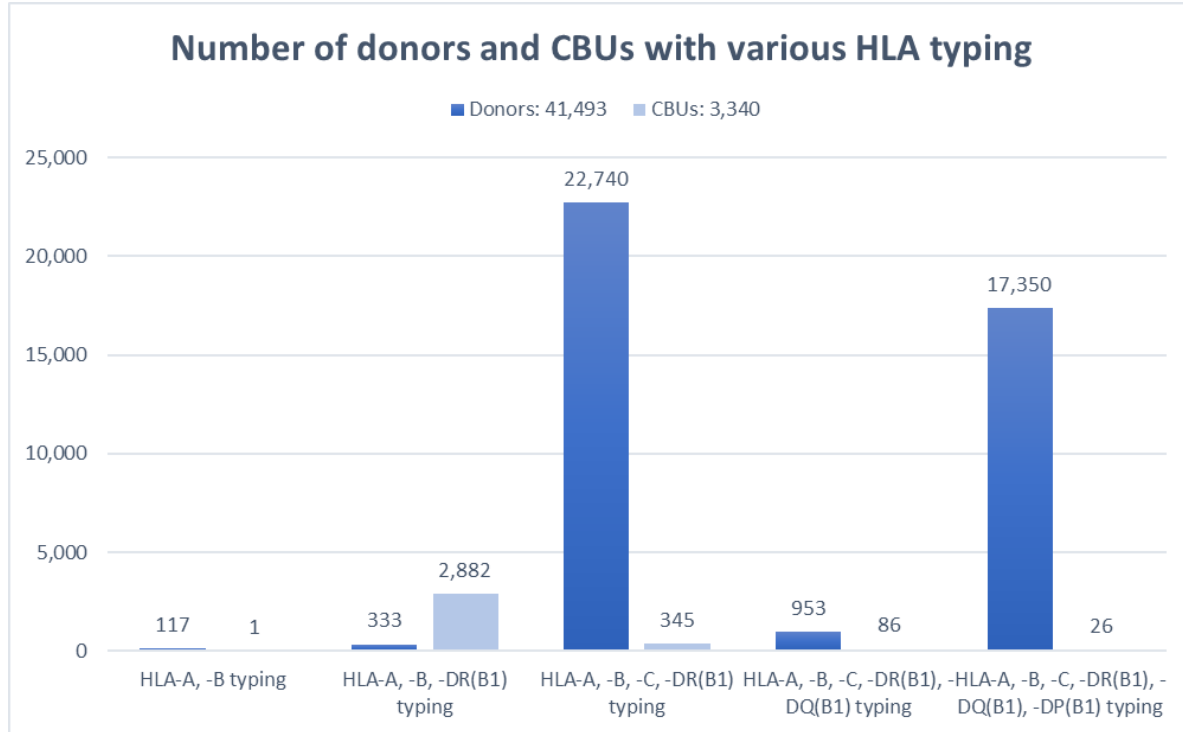
	BM	PBSC	CBU	DLI
<b>National</b>	0	0	-	0
<b>Export to EU member states</b>	0	9	-	1
<b>Export to third countries</b>	0	0	-	0
<b>Import from EU member states</b>	24	82	2	0
<b>Import from third countries</b>	6	10	0	0

# Finland



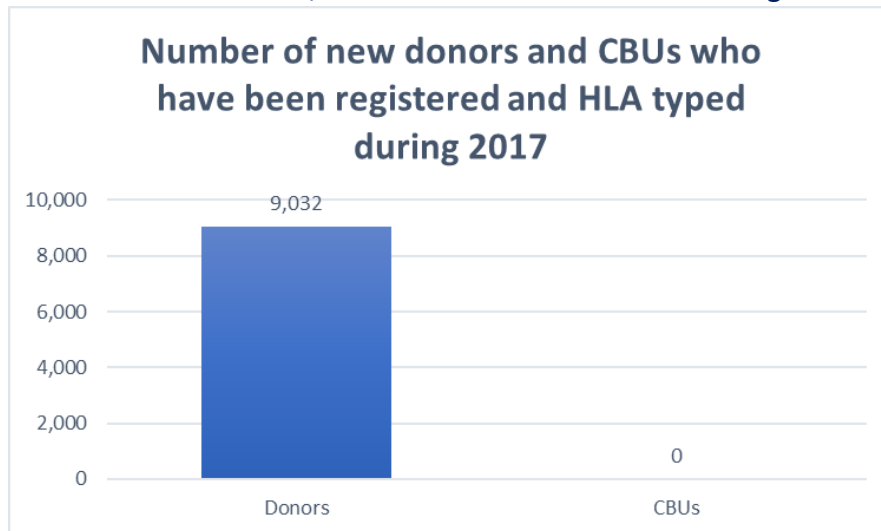
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**44,833**



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

**9,032**



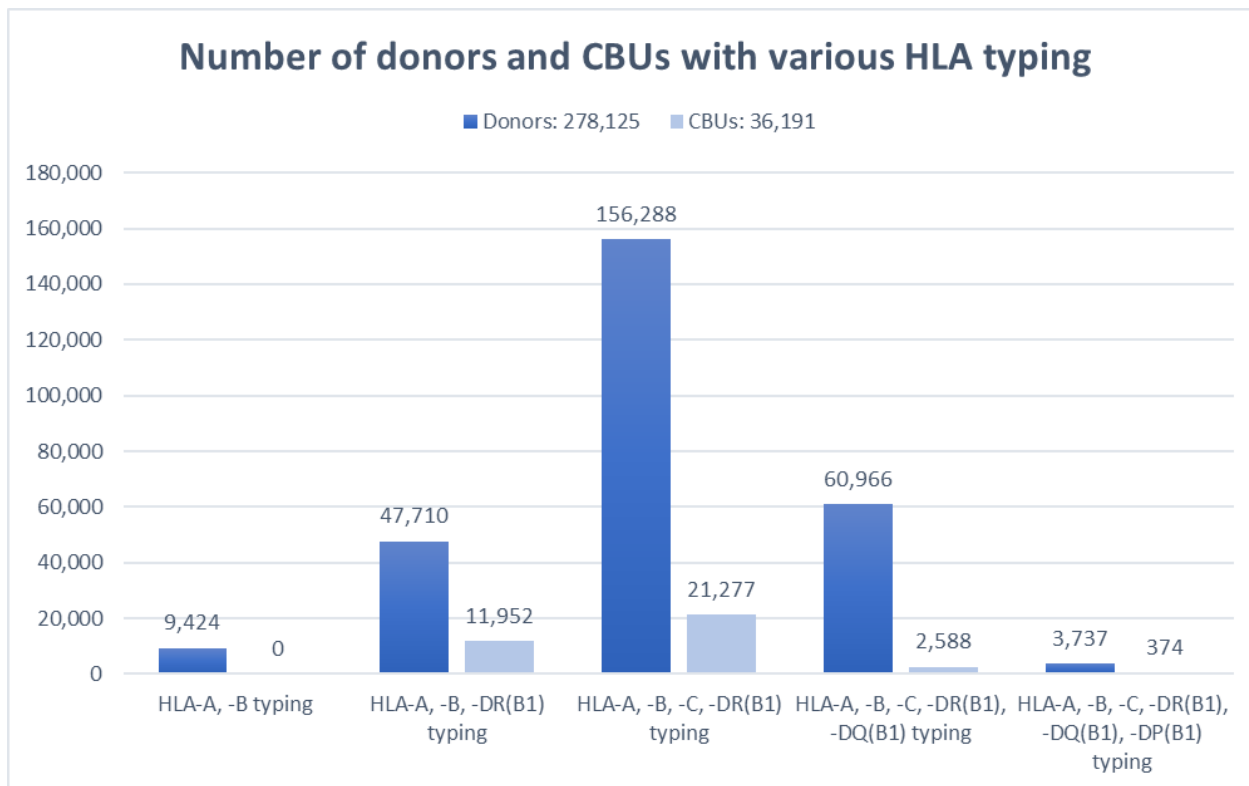
	BM	PBSC	CBU	DLI
<b>National</b>	7	20	1	2
<b>Export to EU member states</b>	3	5	0	1
<b>Export to third countries</b>	0	3	1	0
<b>Import from EU member states</b>	10	58	0	6
<b>Import from third countries</b>	1	7	0	1



# France

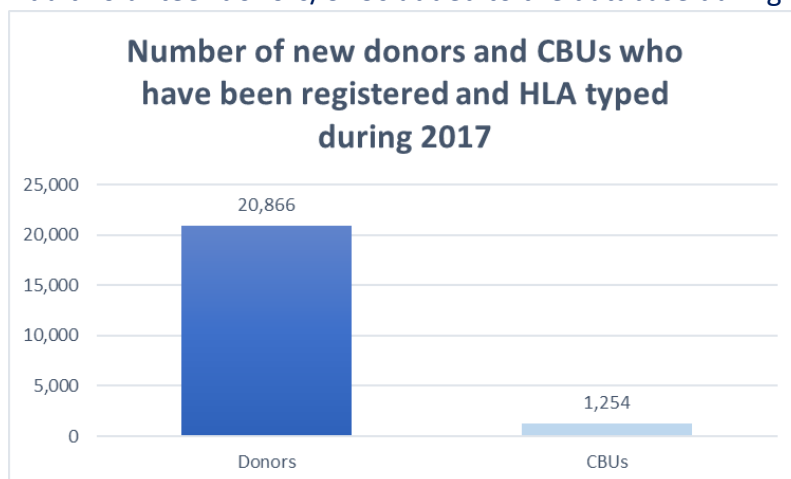
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**314,316**



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

**22,120**



	BM	PBSC	CBU	DLI
<b>National</b>	26	96	45	19
<b>Export to EU member states</b>	13	37	40	4
<b>Export to third countries</b>	5	18	67	1
<b>Import from EU member states</b>	126	538	43	77
<b>Import from third countries</b>	41	98	22	15

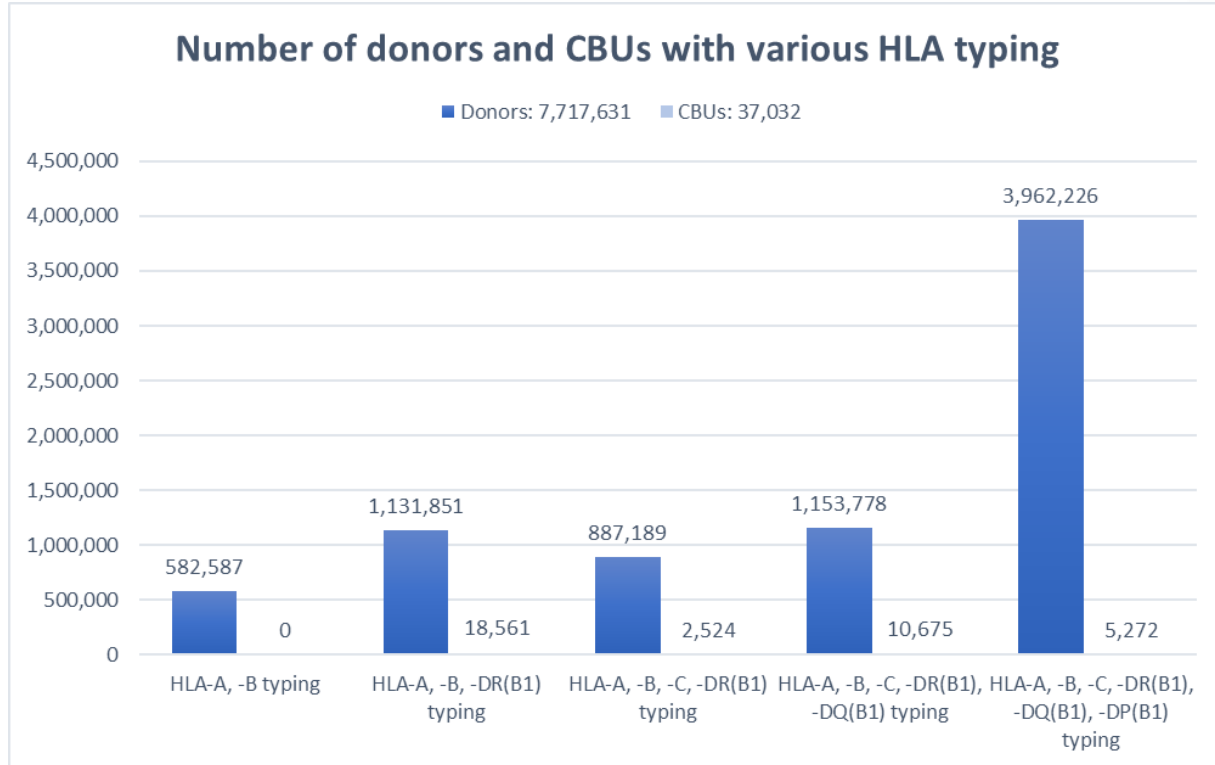


# Germany



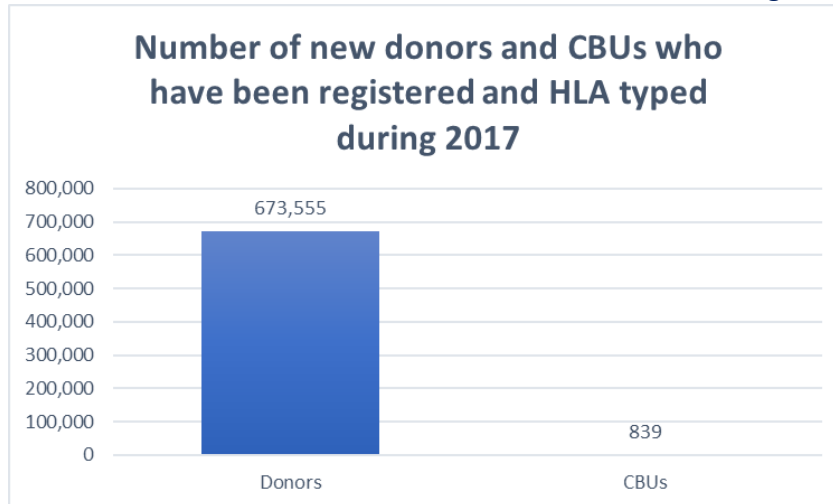
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**7,754,663**



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

**674,394**



	BM	PBSC	CBU	DLI
<b>National</b>	228	1,674	1	277
<b>Export to EU member states</b>	452	2,090	28	254
<b>Export to third countries</b>	557	1,915	50	135
<b>Import from EU member states</b>	23	307	0	43
<b>Import from third countries</b>	23	169	0	13

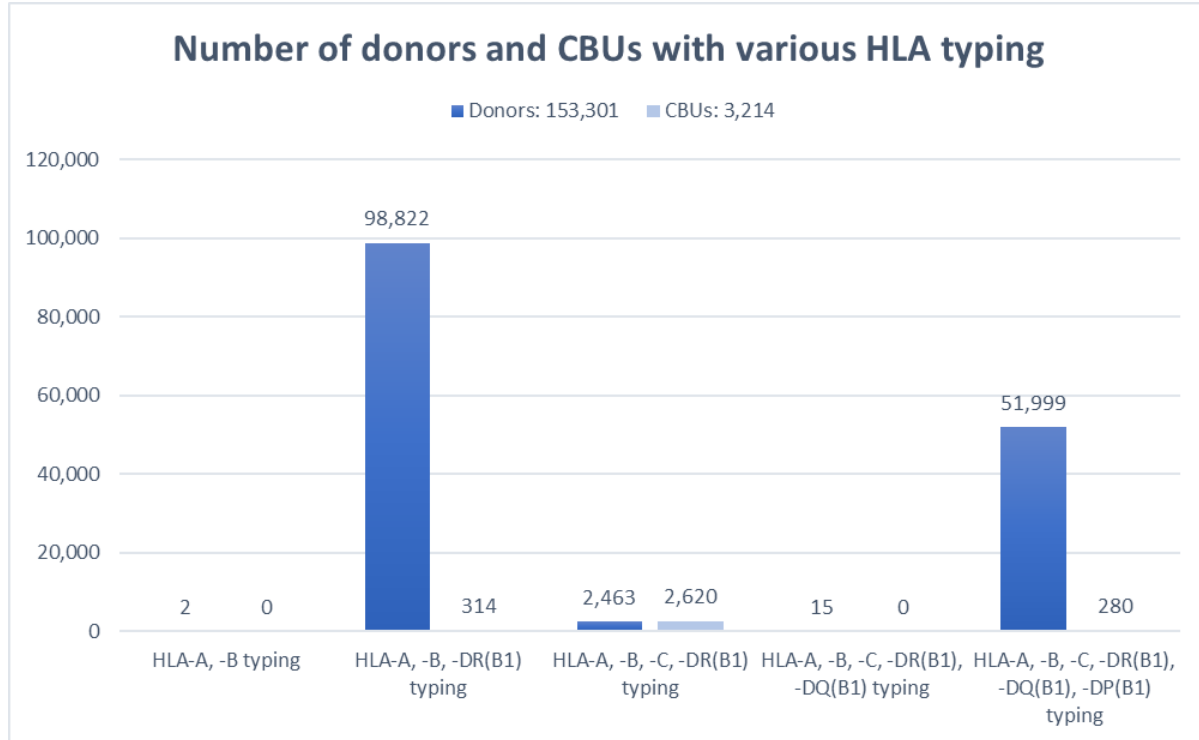
# Greece

The export data for Greece is currently under revision. 



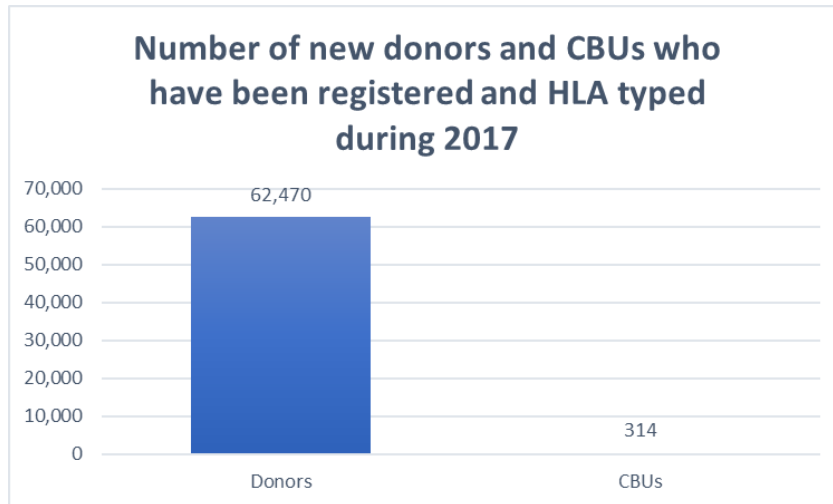
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**156,515**



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

**62,784**



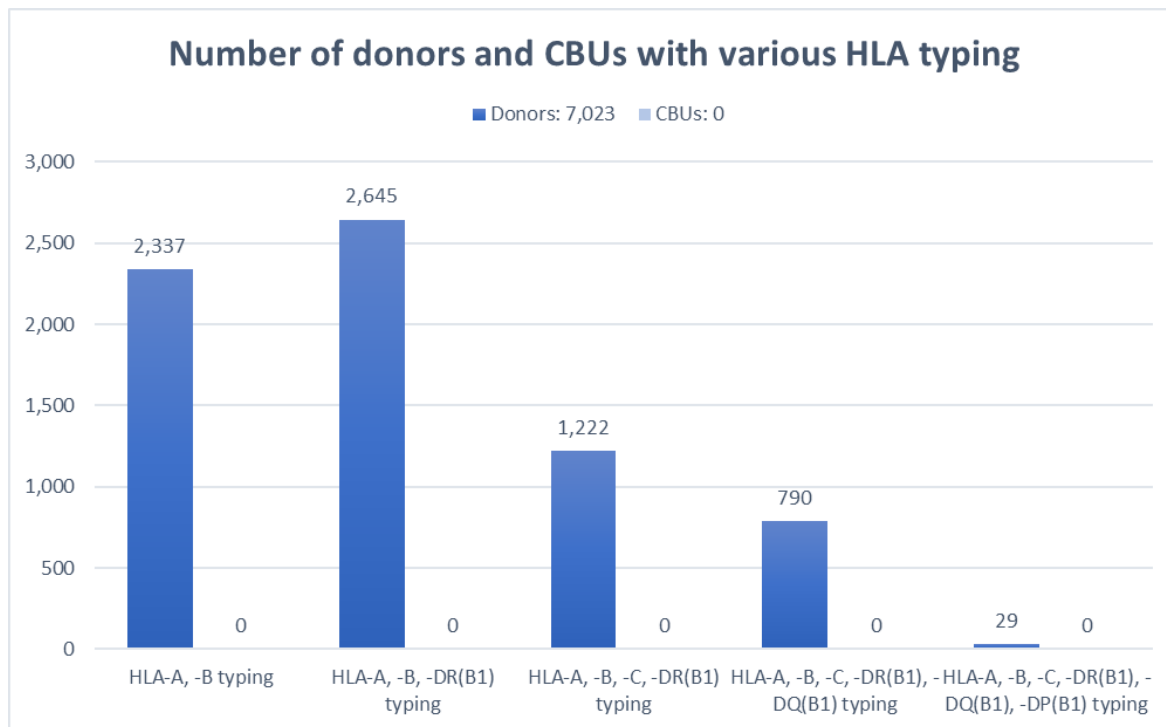
	BM	PBSC	CBU	DLI
<b>National</b>	2	35	1	4
<b>Export to EU member states</b>	0	33	0	2
<b>Export to third countries</b>	0	11	1	0
<b>Import from EU member states</b>	8	46	4	2
<b>Import from third countries</b>	1	9	3	5

# Hungary



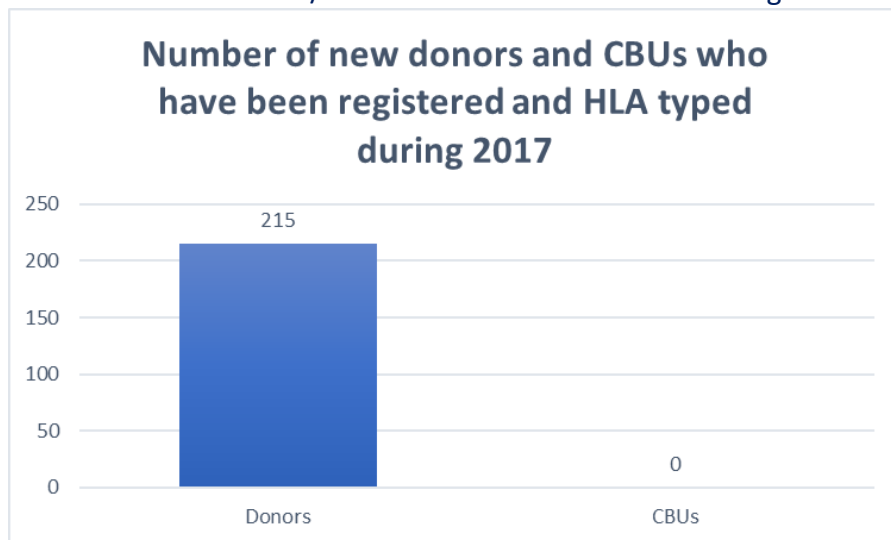
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**7,023**



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

**215**



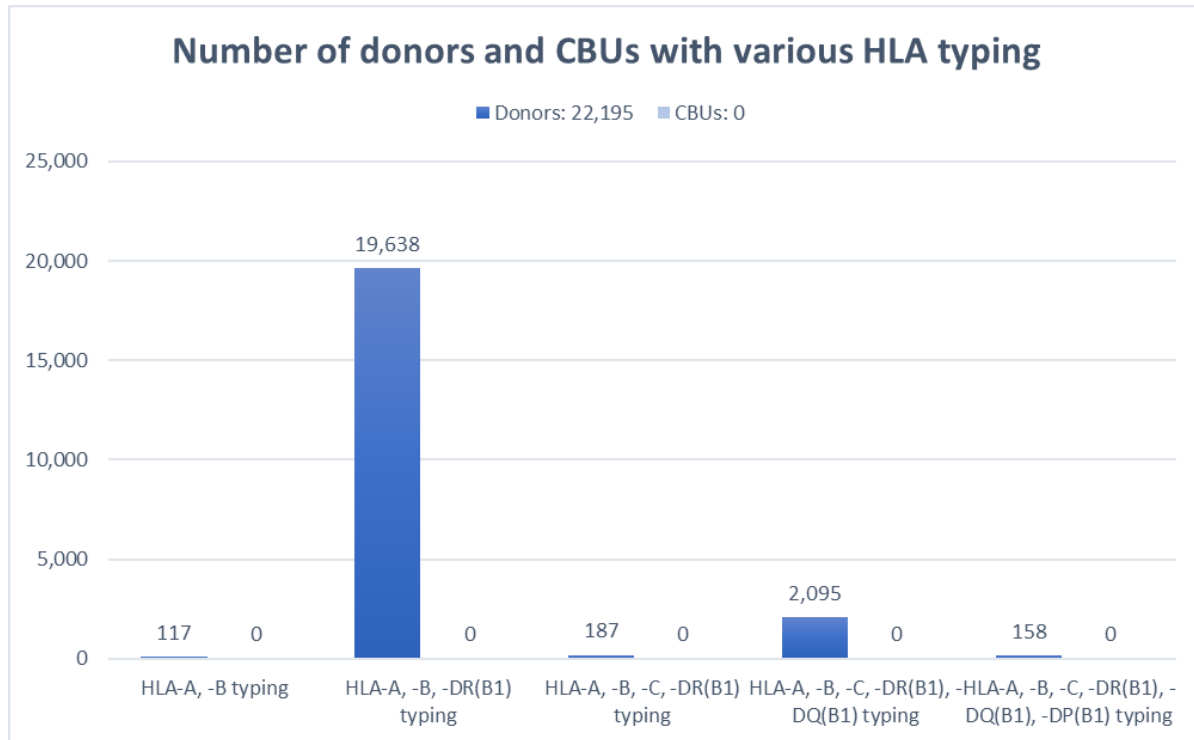
	BM	PBSC	CBU	DLI
<b>National</b>	0	0	-	0
<b>Export to EU member states</b>	0	0	-	0
<b>Export to third countries</b>	0	0	-	0
<b>Import from EU member states</b>	11	49	4	6
<b>Import from third countries</b>	2	4	0	1

# Ireland



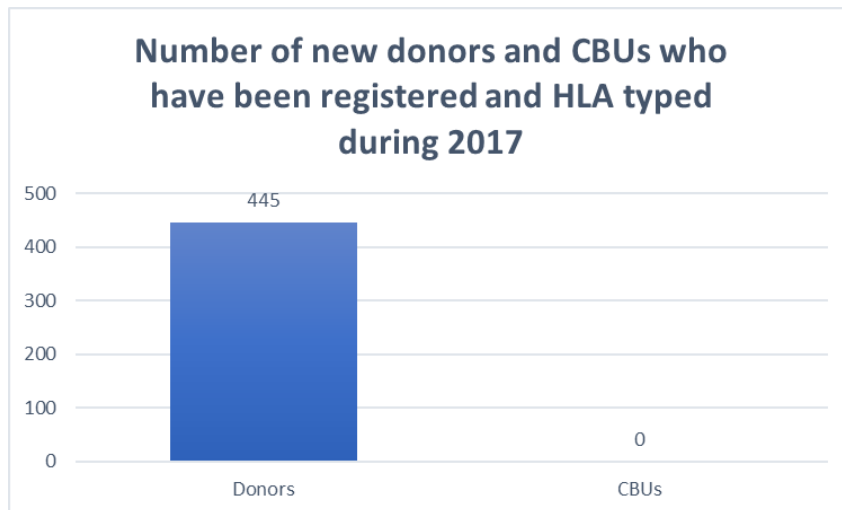
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**22,195**



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

**445**



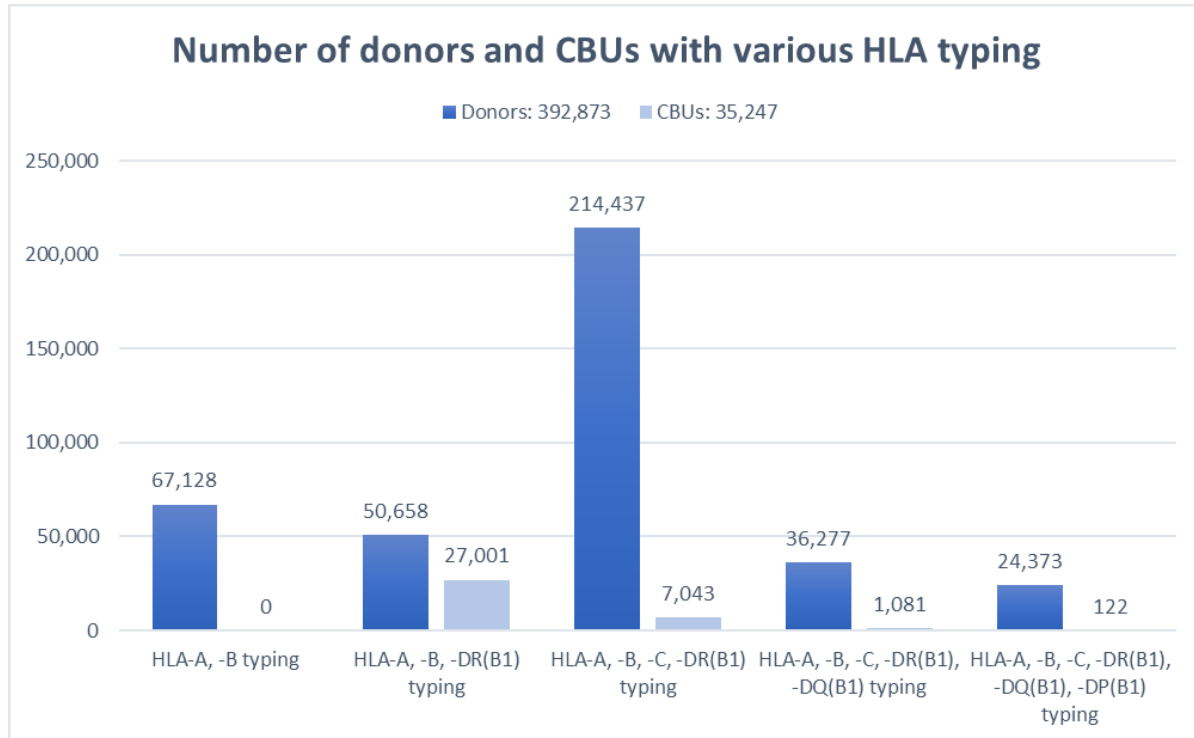
	BM	PBSC	CBU	DLI
<b>National</b>	1	2	-	1
<b>Export to EU member states</b>	0	1	-	0
<b>Export to third countries</b>	0	2	-	0
<b>Import from EU member states</b>	14	31	0	4
<b>Import from third countries</b>	1	6	0	0

# Italy



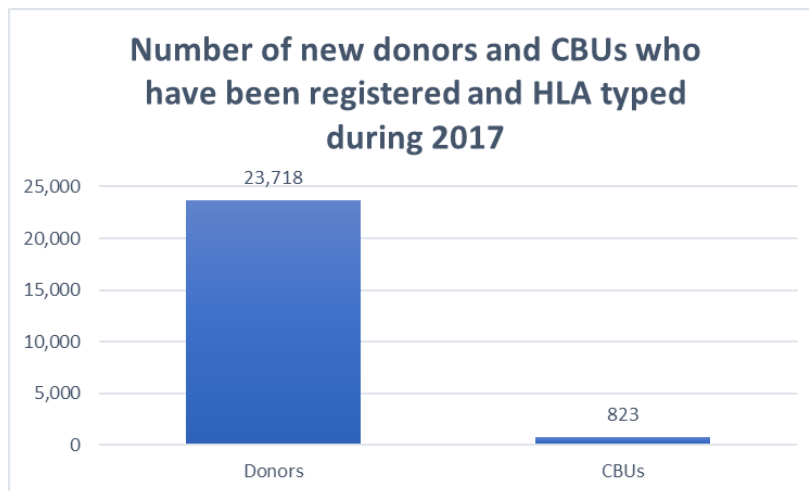
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**428,120**



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

**24,541**



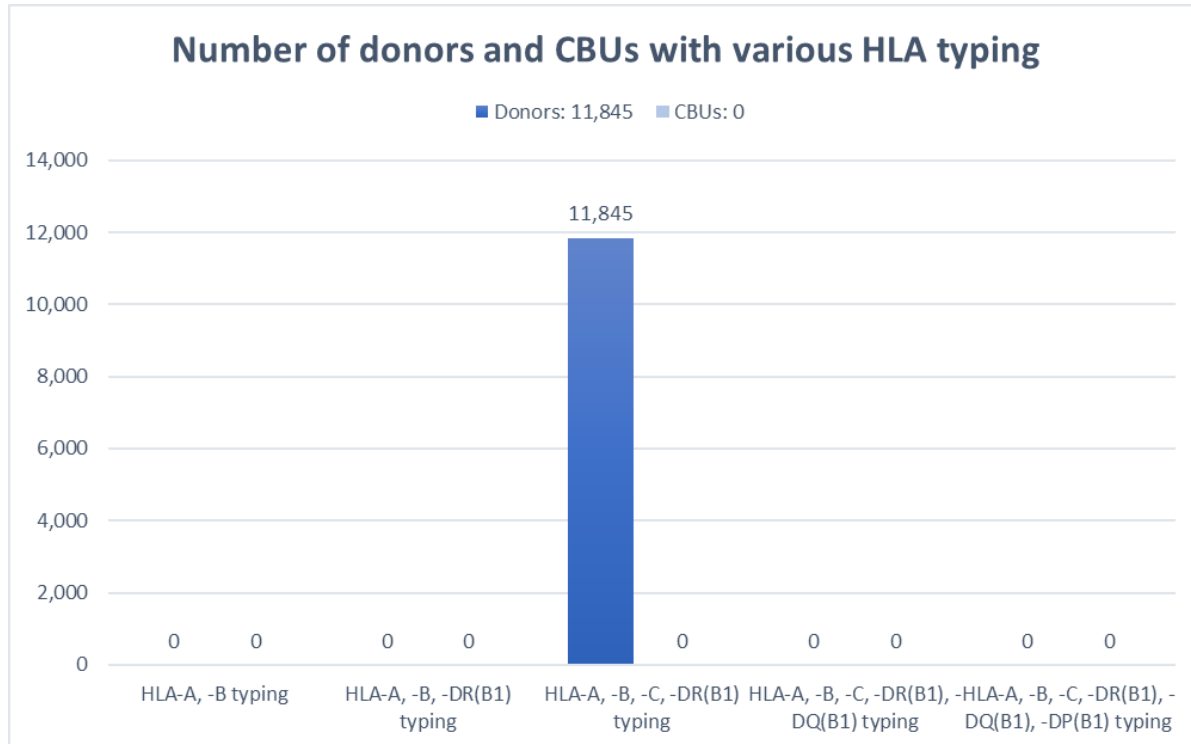
	BM	PBSC	CBU	DLI
<b>National</b>	48	111	2	15
<b>Export to EU member states</b>	8	37	12	7
<b>Export to third countries</b>	9	15	15	2
<b>Import from EU member states</b>	146	357	13	42
<b>Import from third countries</b>	42	126	13	12



# Lithuania

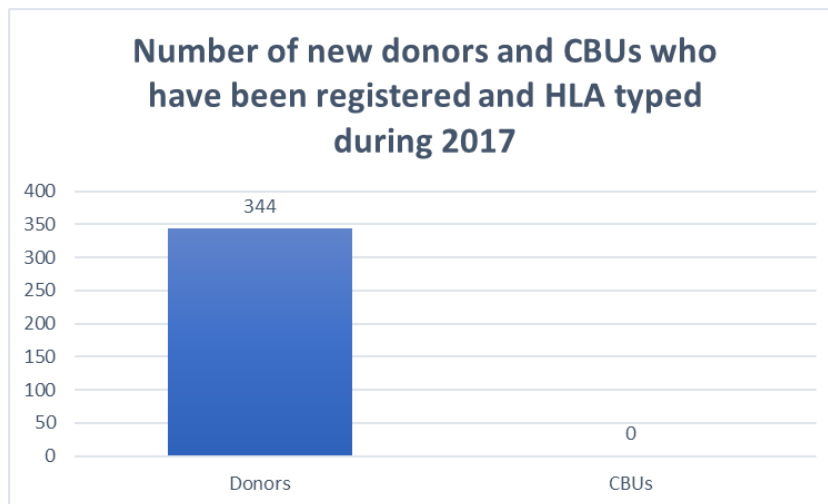
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**11,845**



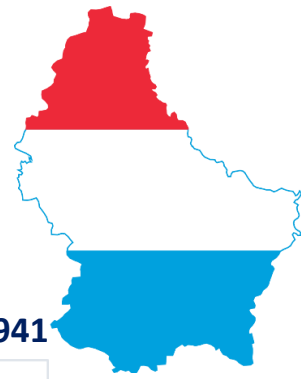
Adult volunteer donors/CBUs added to the database during 2017:

**344**



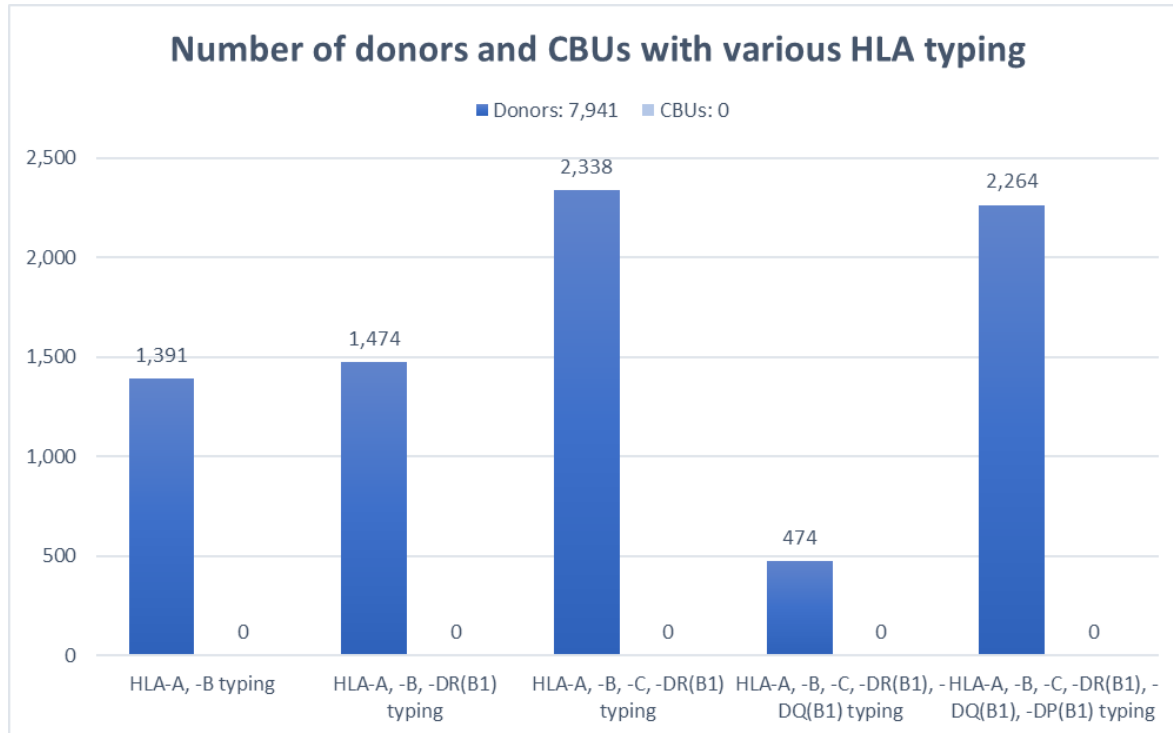
	BM	PBSC	CBU	DLI
<b>National</b>	0	10	-	0
<b>Export to EU member states</b>	0	3	-	0
<b>Export to third countries</b>	0	1	-	0
<b>Import from EU member states</b>	7	25	0	1
<b>Import from third countries</b>	0	3	0	1

# Luxembourg



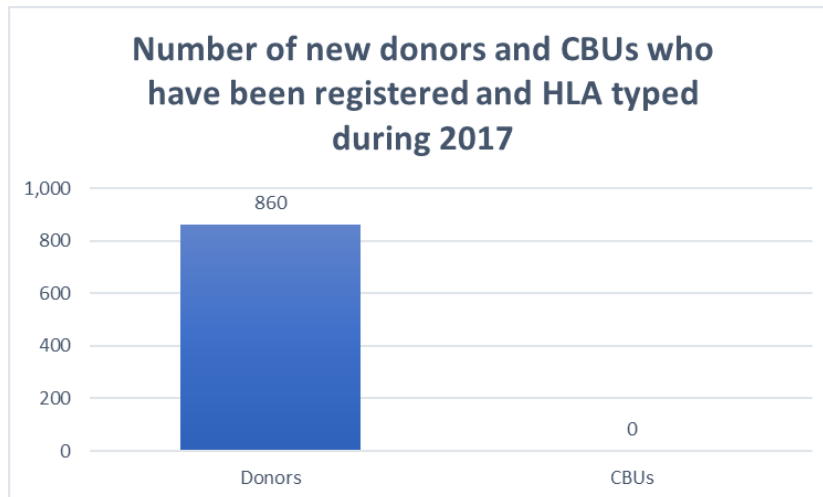
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**7,941**



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

**860**



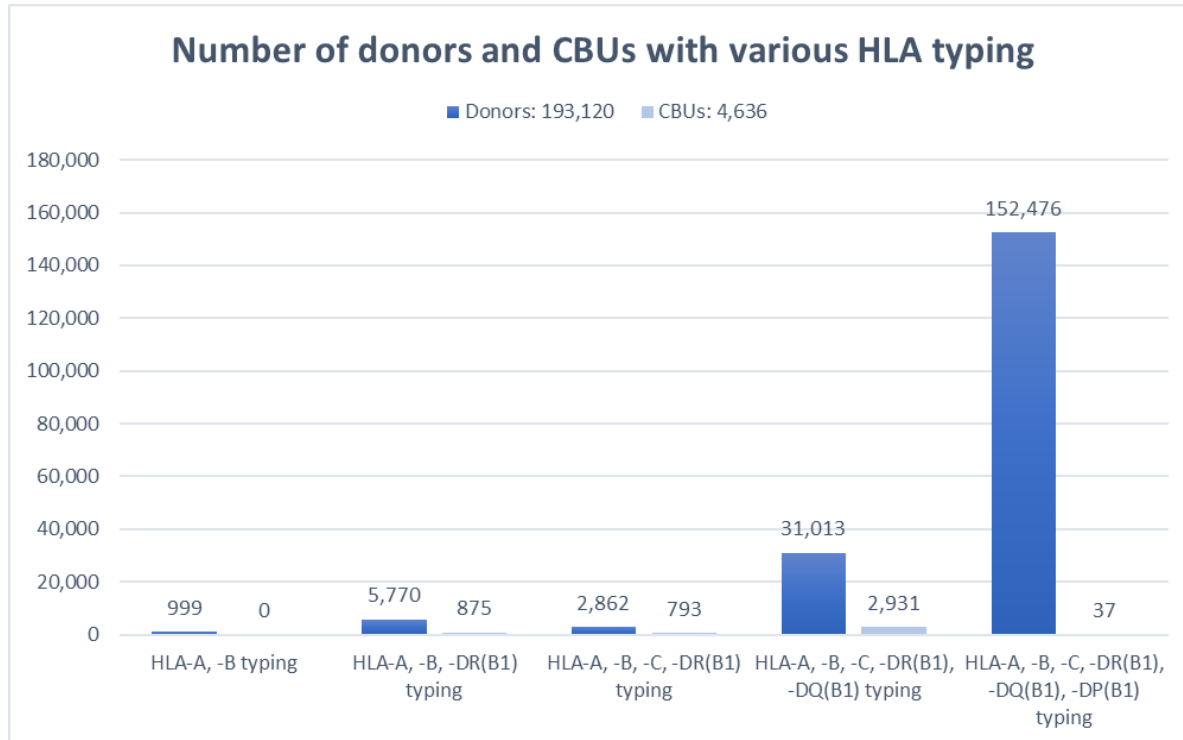
	BM	PBSC	CBU	DLI
<b>National</b>	0	0	-	0
<b>Export to EU member states</b>	0	1	-	0
<b>Export to third countries</b>	1	0	-	1
<b>Import from EU member states</b>	0	0	0	0
<b>Import from third countries</b>	0	0	0	0

# Netherlands



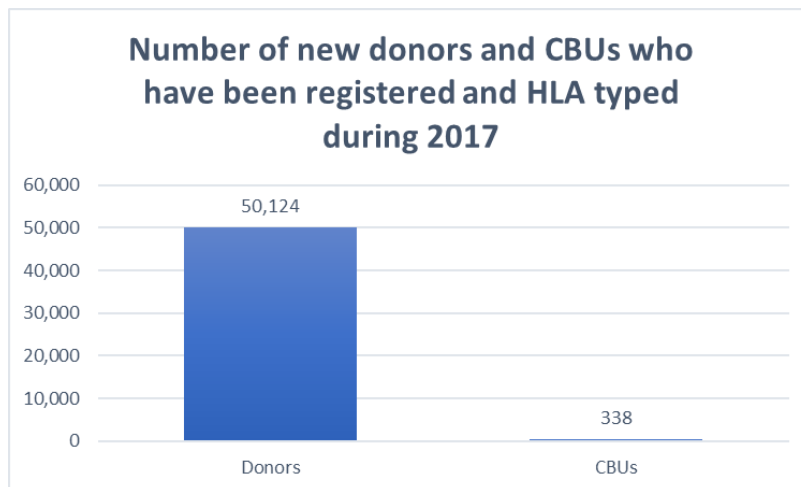
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**197,756**



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

**50,462**



	BM	PBSC	CBU	DLI
<b>National</b>	3	13	3	3
<b>Export to EU member states</b>	14	41	1	3
<b>Export to third countries</b>	11	17	2	1
<b>Import from EU member states</b>	23	254	49	46
<b>Import from third countries</b>	5	39	27	8

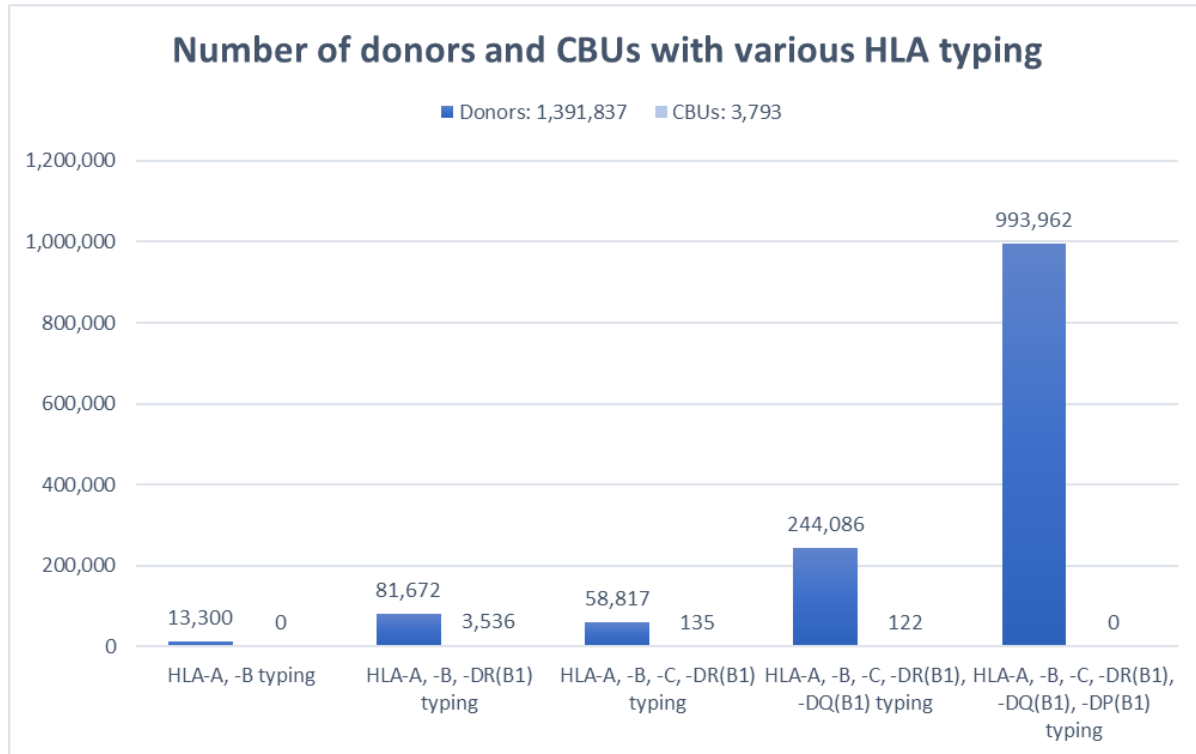


# Poland



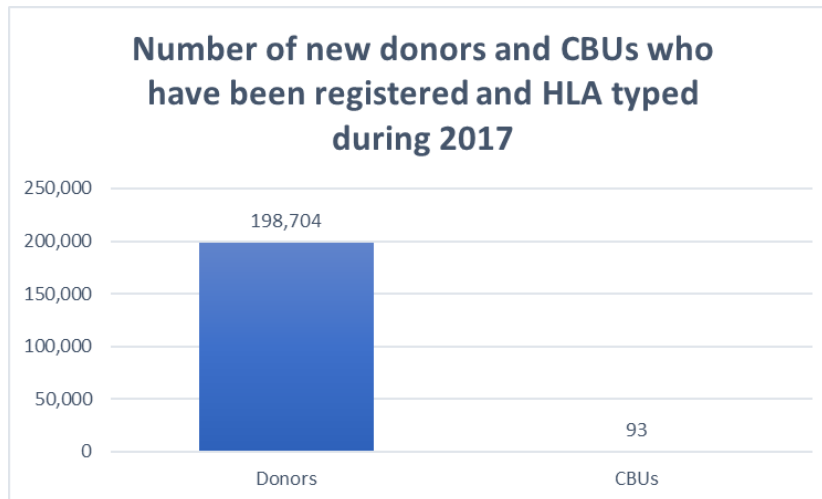
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**1,395,630**



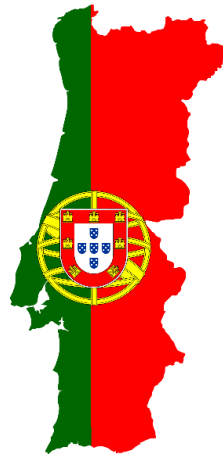
Adult volunteer donors/CBUs added to the database during 2017:

**198,797**



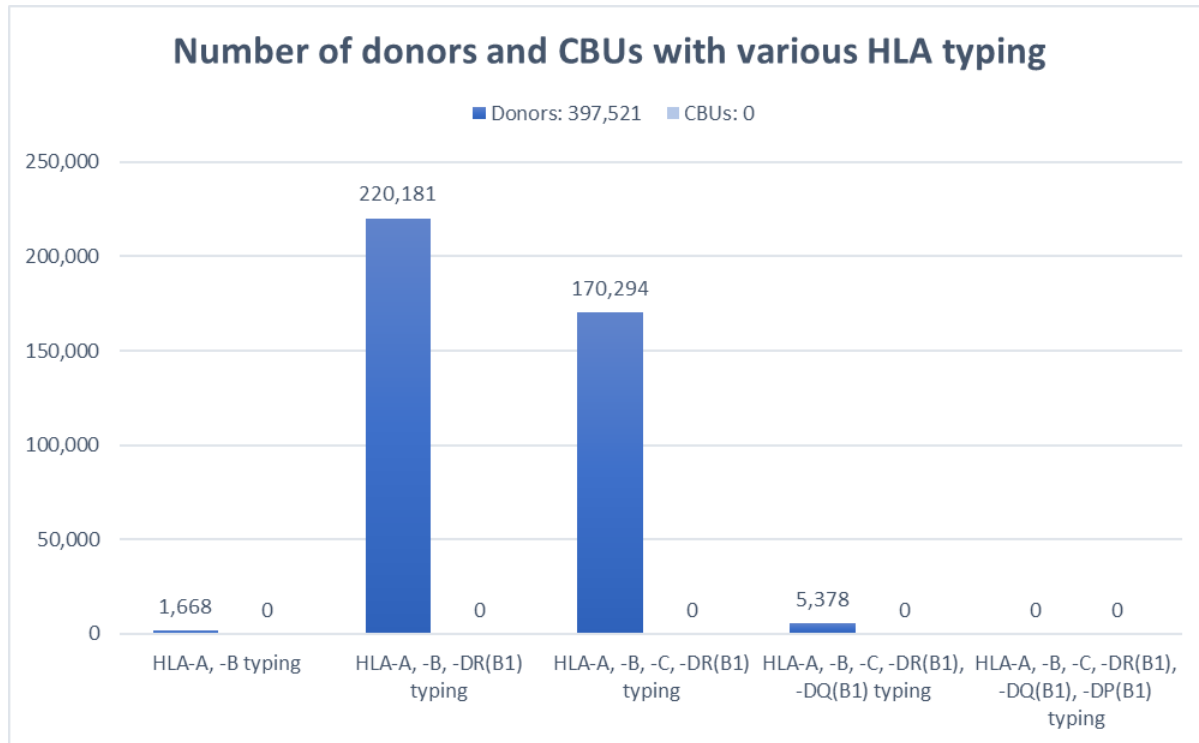
	BM	PBSC	CBU	DLI
<b>National</b>	23	250	0	15
<b>Export to EU member states</b>	77	487	0	55
<b>Export to third countries</b>	75	315	0	18
<b>Import from EU member states</b>	19	121	1	3
<b>Import from third countries</b>	2	21	0	0

# Portugal



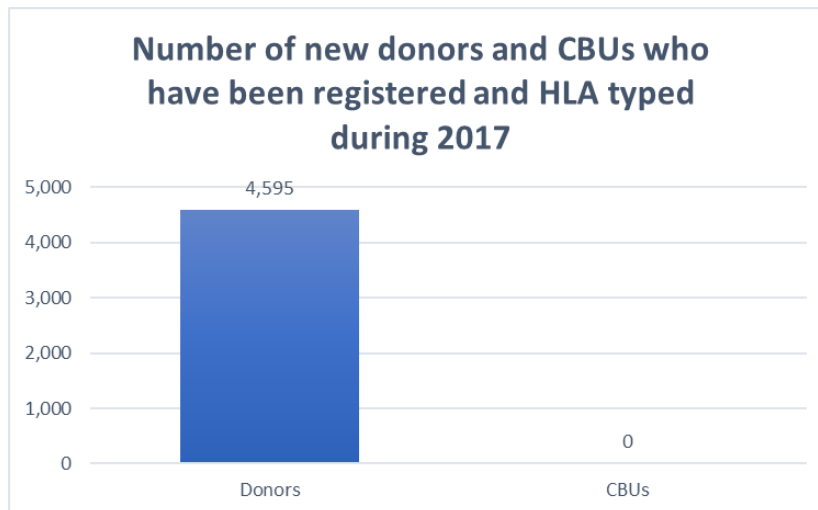
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**397,521**



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

**4,595**



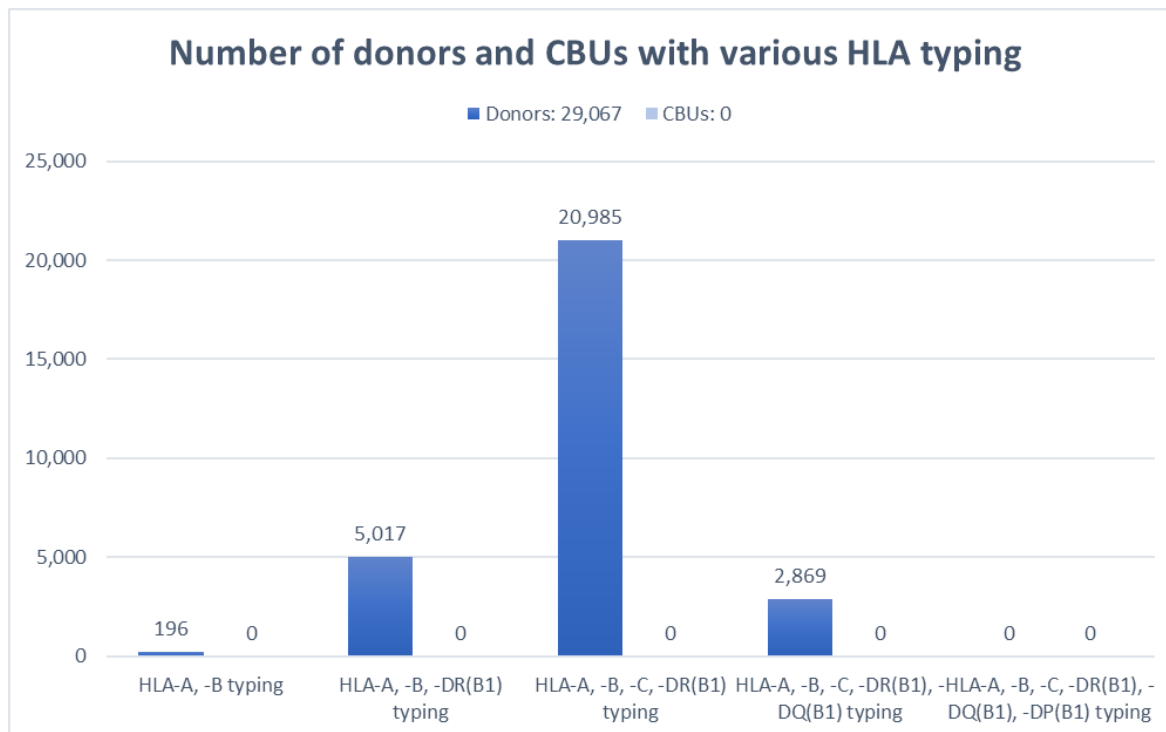
	BM	PBSC	CBU	DLI
<b>National</b>	8	32	-	0
<b>Export to EU member states</b>	4	26	-	5
<b>Export to third countries</b>	6	13	-	0
<b>Import from EU member states</b>	10	22	0	3
<b>Import from third countries</b>	4	4	1	0



# Romania

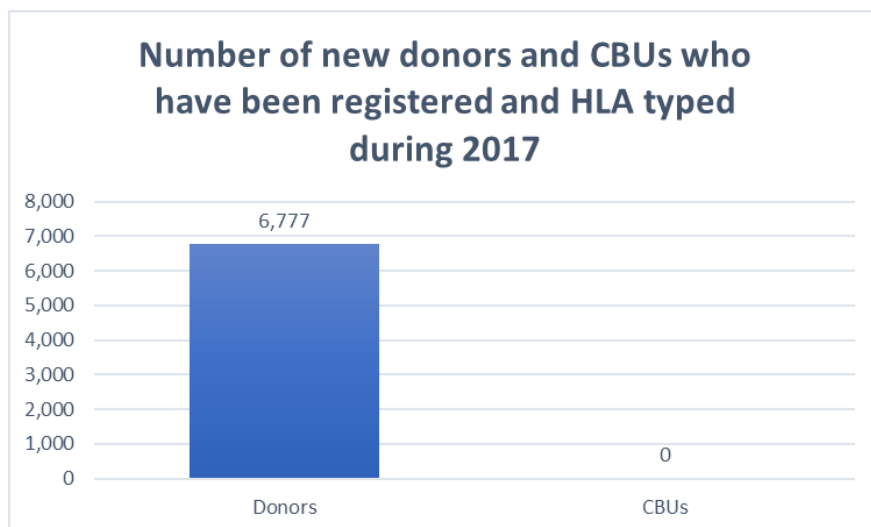
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**29,067**



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

**6,777**



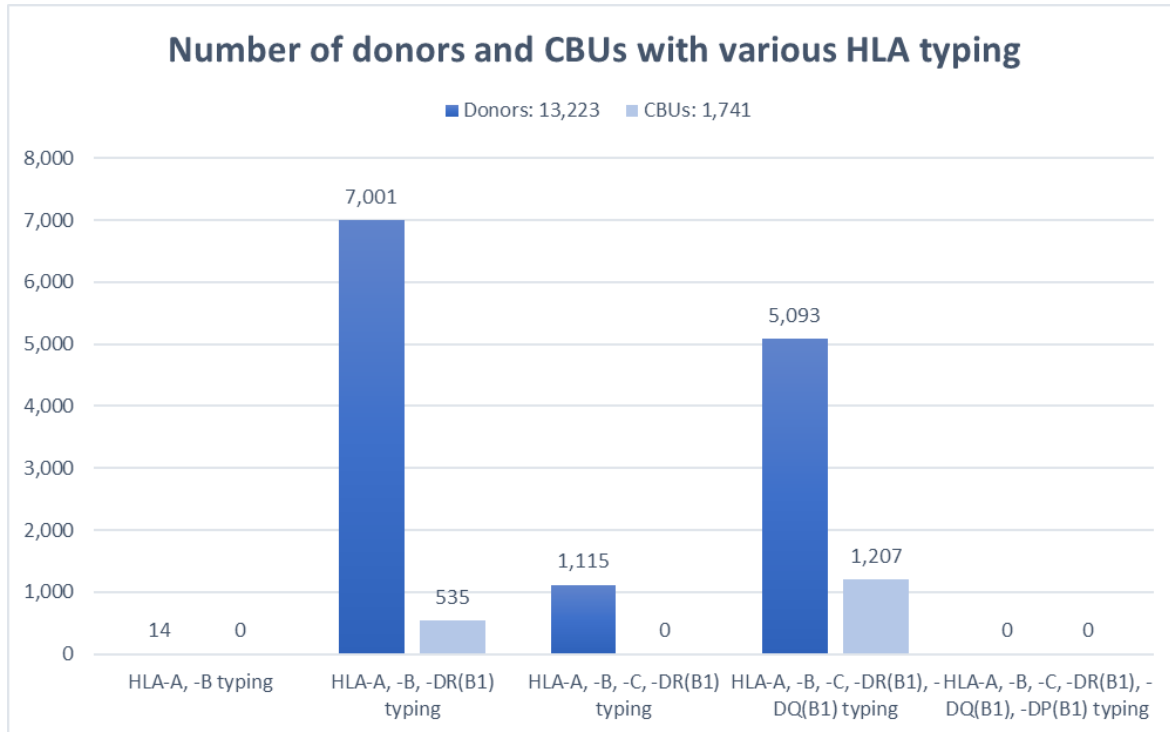
	BM	PBSC	CBU	DLI
<b>National</b>	0	1	-	0
<b>Export to EU member states</b>	1	2	-	0
<b>Export to third countries</b>	0	0	-	0
<b>Import from EU member states</b>	1	33	0	2
<b>Import from third countries</b>	0	1	0	0



# Slovakia

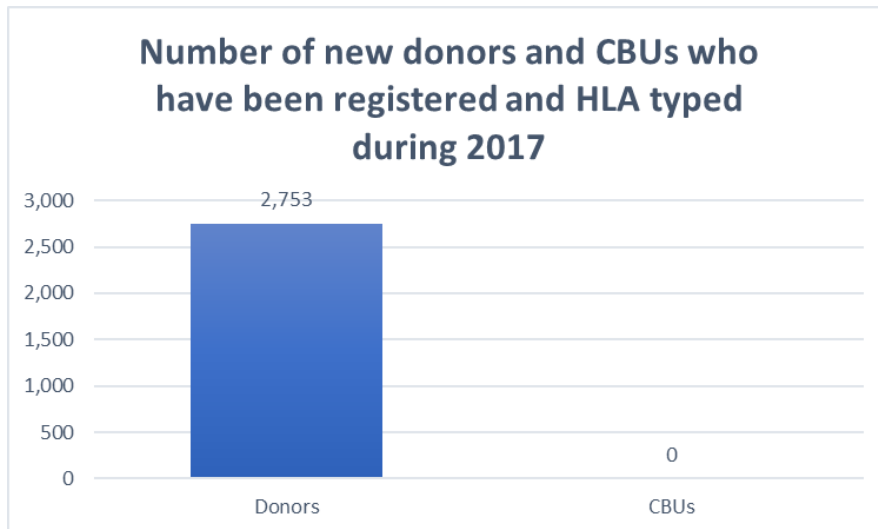
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**14,964**



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

**2,753**



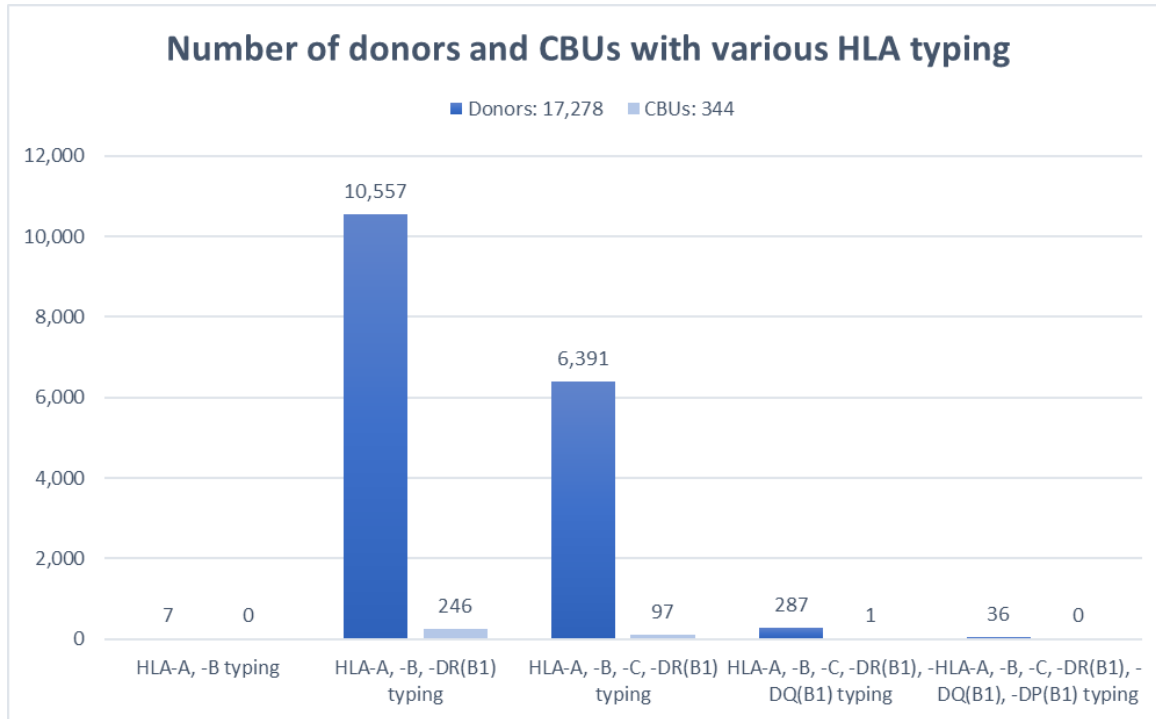
	BM	PBSC	CBU	DLI
<b>National</b>	0	1	0	0
<b>Export to EU member states</b>	0	0	3	0
<b>Export to third countries</b>	0	1	0	0
<b>Import from EU member states</b>	8	34	0	0
<b>Import from third countries</b>	0	2	0	0

# Slovenia



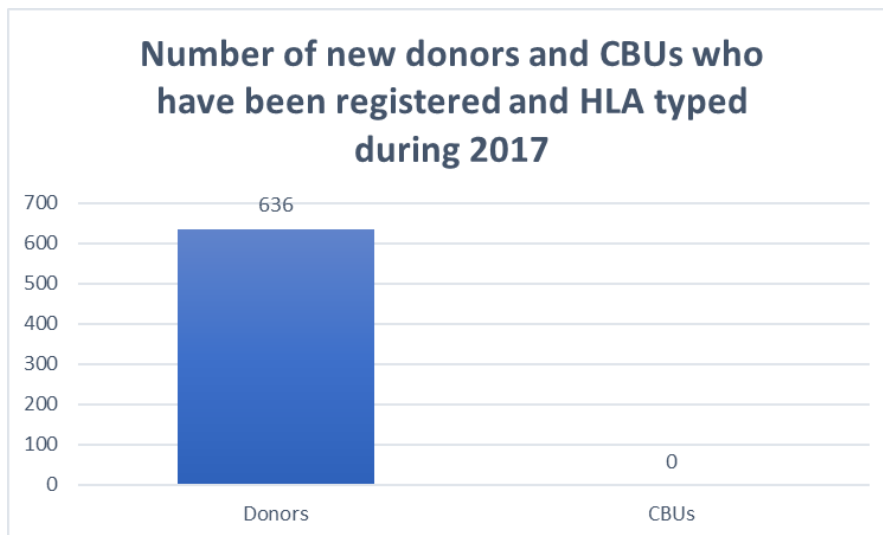
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**17,622**



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

**636**



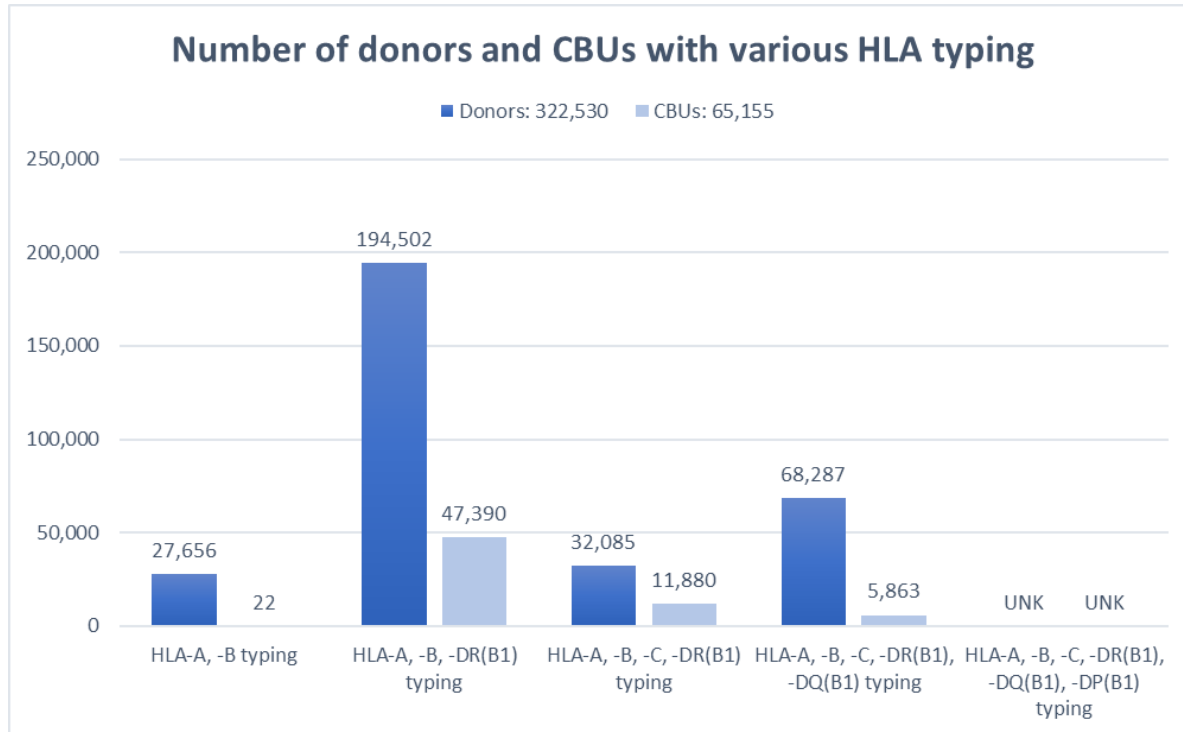
	BM	PBSC	CBU	DLI
<b>National</b>	0	1	0	0
<b>Export to EU member states</b>	0	1	0	0
<b>Export to third countries</b>	0	2	0	0
<b>Import from EU member states</b>	0	24	1	1
<b>Import from third countries</b>	0	2	1	1

# Spain



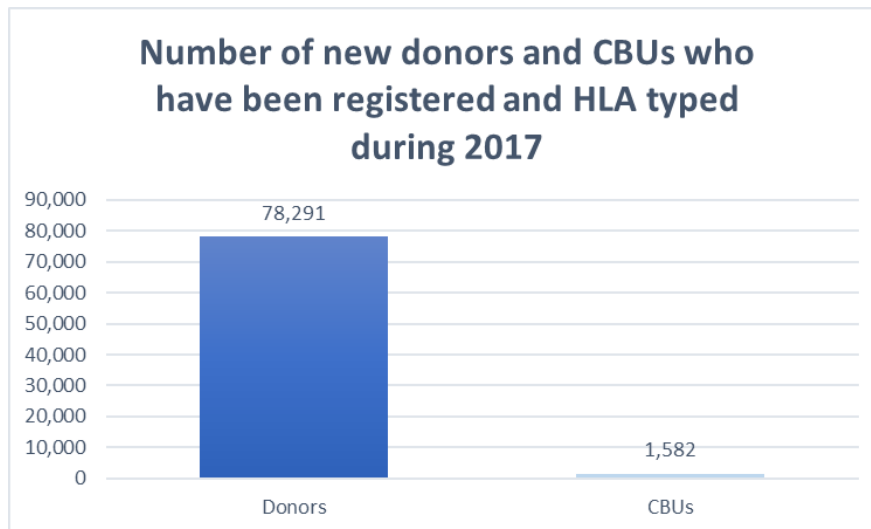
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**387,685**



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

**79,873**



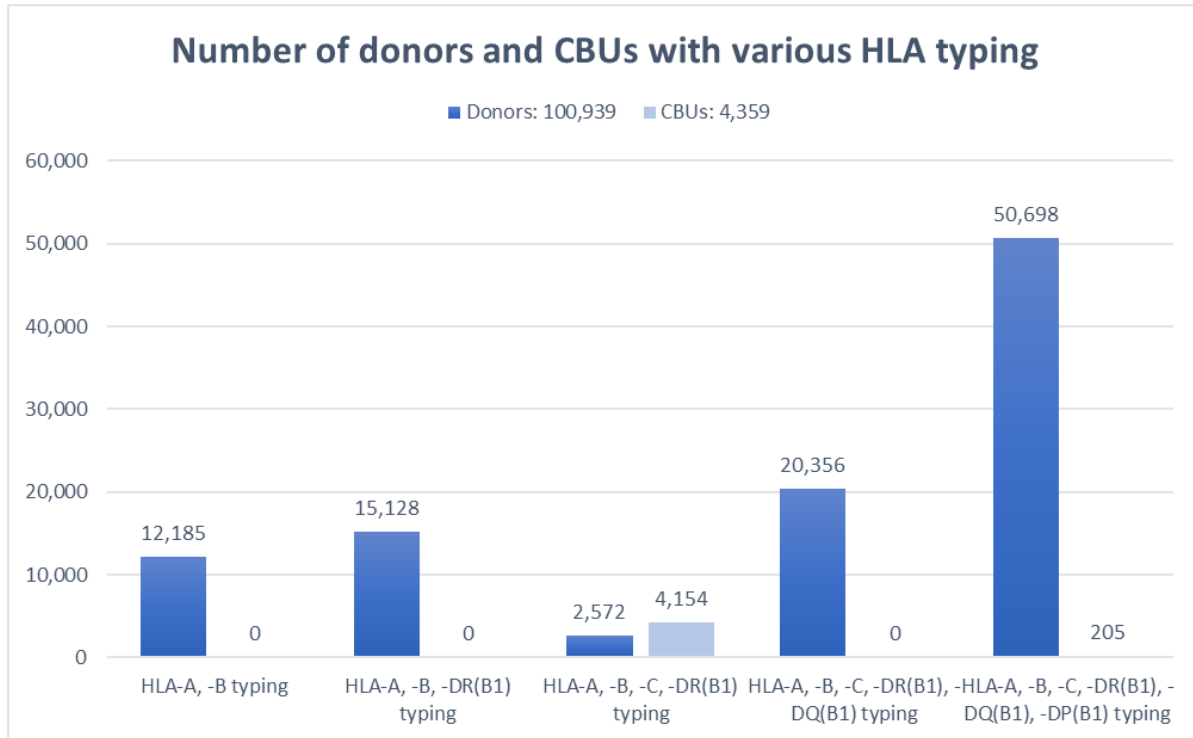
	BM	PBSC	CBU	DLI
<b>National</b>	14	69	21	1
<b>Export to EU member states</b>	8	31	53	1
<b>Export to third countries</b>	3	21	103	0
<b>Import from EU member states</b>	45	201	15	11
<b>Import from third countries</b>	14	83	12	3

# Sweden



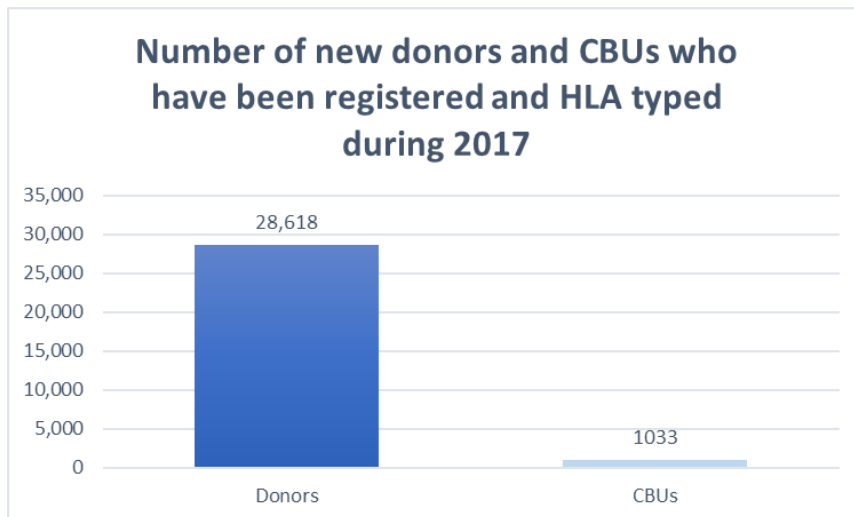
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**105,298**



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

**28,651**



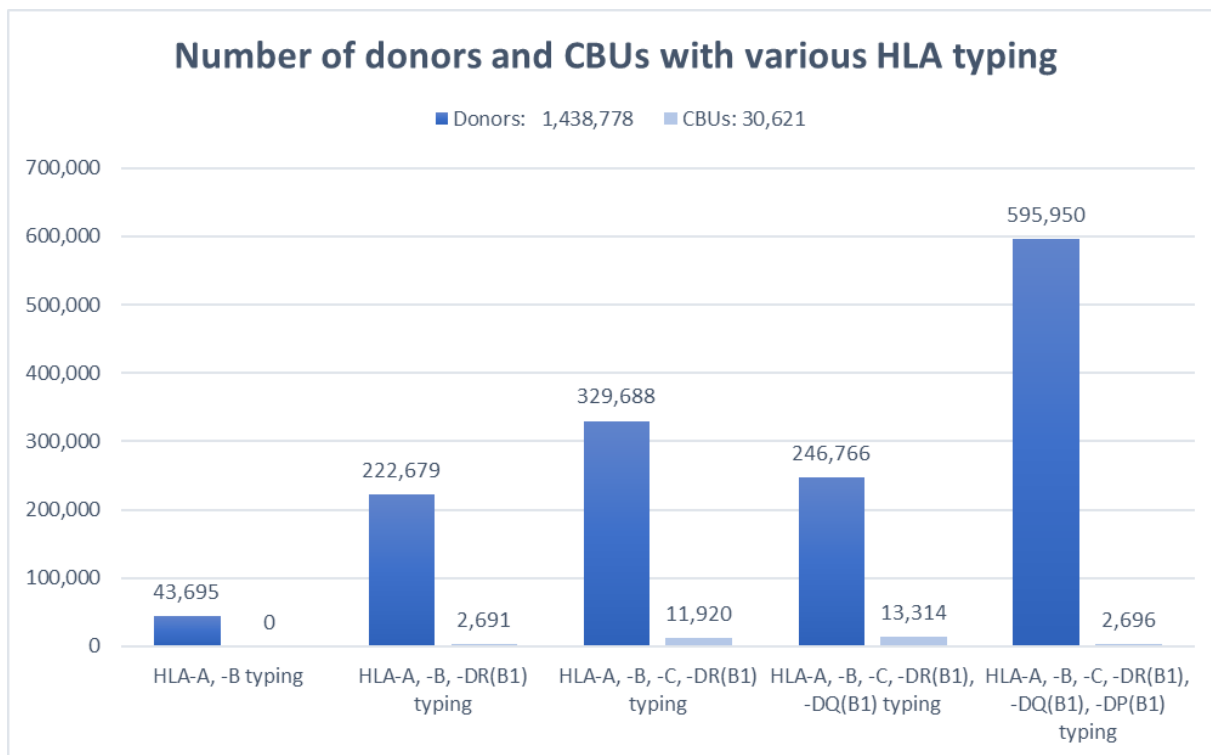
	BM	PBSC	CBU	DLI
<b>National</b>	0	31	0	2
<b>Export to EU member states</b>	3	15	5	0
<b>Export to third countries</b>	2	14	4	1
<b>Import from EU member states</b>	26	117	0	7
<b>Import from third countries</b>	8	17	1	0



# United Kingdom

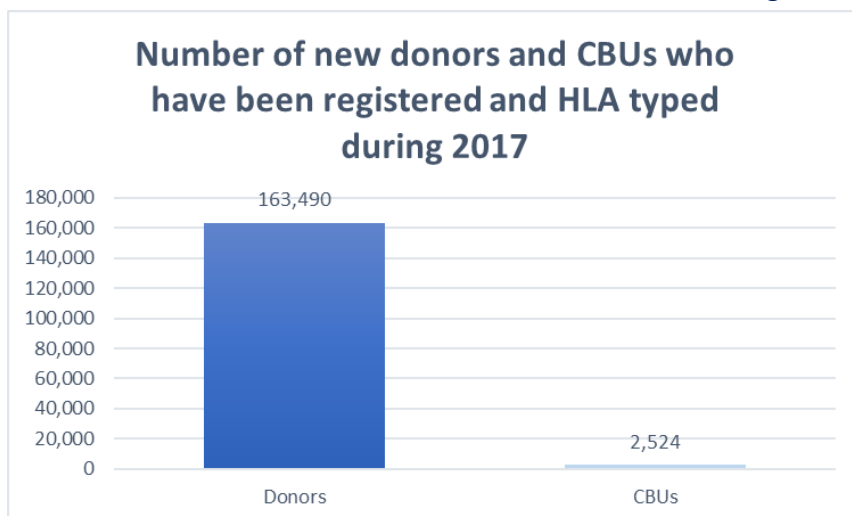
Number of registered and typed donors/CBUs on December 31<sup>st</sup> 2017:

**1,469,399**



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

**166,014**



	BM	PBSC	CBU	DLI
<b>National</b>	49	392	28	59
<b>Export to EU member states</b>	36	217	19	23
<b>Export to third countries</b>	77	292	46	8
<b>Import from EU member states</b>	63	392	28	59
<b>Import from third countries</b>	22	116	44	7



## 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 blank (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)	<input type="text"/>
1a) Number of adult volunteer donors (all donors)	<input type="text"/>
1a1) Number of donors with HLA-A, -B typing	<input type="text"/>
1a2) Number of donors with HLA-A, -B, -DR(B1) typing	<input type="text"/>
1a3) Number of donors with HLA-A, -B, -C, -DR(B1) typing	<input type="text"/>
1a4) Number of donors with HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	<input type="text"/>
1a5) Number of donors with HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	<input type="text"/>
1b) Number of HLA typed CBUs available for transplantation for unrelated patients	<input type="text"/>
1b1) Number of CBUs with HLA-A, -B typing	<input type="text"/>
1b2) Number of CBUs with HLA-A, -B, -DR(B1) typing	<input type="text"/>
1b3) Number of CBUs with HLA-A, -B, -C, -DR(B1) typing	<input type="text"/>
1b4) Number of CBUs with HLA-A, -B, -C, -DR(B1), -DQ(B1) typing	<input type="text"/>
1b5) Number of CBUs with HLA-A, -B, -C, -DR(B1), -DQ(B1), -DP(B1) typing	<input type="text"/>

#### Adult volunteer donors/CBUs added to the database during 2017

[hide questionnaire](#)

2) Count all new donors/CBUs recruited and HLA typed during 2017	<input type="text"/>
2a) Count the donors who have been registered and HLA typed during 2017	<input type="text"/>
2b) Count the number of new HLA typed CBUs added during 2017	<input type="text"/>

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

[hide questionnaire](#)

**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	<input type="text"/>
Belgium	<input type="text"/>
Brazil	<input type="text"/>
Bulgaria	<input type="text"/>
Canada	<input type="text"/>
Chile	<input type="text"/>
China	<input type="text"/>
China Hong Kong	<input type="text"/>
Colombia	<input type="text"/>
Costa Rica	<input type="text"/>
Croatia	<input type="text"/>
Cuba	<input type="text"/>
Cyprus	<input type="text"/>
Czech Republic	<input type="text"/>
Denmark	<input type="text"/>
Ecuador	<input type="text"/>
Egypt	<input type="text"/>
Estonia	<input type="text"/>
Finland	<input type="text"/>
France	<input type="text"/>

Georgia	<input type="text"/>
Germany	<input type="text"/>
Greece	<input type="text"/>
Hungary	<input type="text"/>
India	<input type="text"/>
Iran	<input type="text"/>
Ireland	<input type="text"/>
Israel	<input type="text"/>
Italy	<input type="text"/>
Japan	<input type="text"/>
Jordan	<input type="text"/>
Korea	<input type="text"/>
Latvia	<input type="text"/>
Liechtenstein	<input type="text"/>
Lithuania	<input type="text"/>
Malaysia	<input type="text"/>
Mexico	<input type="text"/>
Netherlands	<input type="text"/>
New Zealand	<input type="text"/>
Norway	<input type="text"/>
Oman	<input type="text"/>

Pakistan	<input type="text"/>
Philippines	<input type="text"/>
Poland	<input type="text"/>
Portugal	<input type="text"/>
Romania	<input type="text"/>
Russia	<input type="text"/>
San Marino	<input type="text"/>
Saudi Arabia	<input type="text"/>
Serbia	<input type="text"/>
Singapore	<input type="text"/>
Slovakia	<input type="text"/>
Slovenia	<input type="text"/>
South Africa	<input type="text"/>
Spain	<input type="text"/>
Sri Lanka	<input type="text"/>
Sweden	<input type="text"/>
Switzerland	<input type="text"/>
Taiwan, province of China	<input type="text"/>
Thailand	<input type="text"/>
Turkey	<input type="text"/>

United Kingdom	<input type="text"/>
United States	<input type="text"/>
Uruguay	<input type="text"/>
Venezuela	<input type="text"/>
Vietnam	<input type="text"/>
Please specify	No.: <input type="text"/> Text: <input type="text"/>
56) HPC-Apheresis shipped to the following countries	<input type="text"/>
Own country	<input type="text"/>
Afghanistan	<input type="text"/>
Argentina	<input type="text"/>
Armenia	<input type="text"/>
Australia	<input type="text"/>
Austria	<input type="text"/>
Belarus	<input type="text"/>
Belgium	<input type="text"/>
Brazil	<input type="text"/>
Bulgaria	<input type="text"/>
Canada	<input type="text"/>
Chile	<input type="text"/>
China	<input type="text"/>

China Hong Kong	<input type="text"/>
Colombia	<input type="text"/>
Costa Rica	<input type="text"/>
Croatia	<input type="text"/>
Cuba	<input type="text"/>
Cyprus	<input type="text"/>
Czech Republic	<input type="text"/>
Denmark	<input type="text"/>
Ecuador	<input type="text"/>
Egypt	<input type="text"/>
Estonia	<input type="text"/>
Finland	<input type="text"/>
France	<input type="text"/>
Georgia	<input type="text"/>
Germany	<input type="text"/>
Greece	<input type="text"/>
Hungary	<input type="text"/>
India	<input type="text"/>
Iran	<input type="text"/>
Ireland	<input type="text"/>



Israel	<input type="text"/>
Italy	<input type="text"/>
Japan	<input type="text"/>
Jordan	<input type="text"/>
Korea	<input type="text"/>
Latvia	<input type="text"/>
Lebanon	<input type="text"/>
Liechtenstein	<input type="text"/>
Lithuania	<input type="text"/>
Malaysia	<input type="text"/>
Mexico	<input type="text"/>
Netherlands	<input type="text"/>
New Zealand	<input type="text"/>
Norway	<input type="text"/>
Oman	<input type="text"/>
Pakistan	<input type="text"/>
Philippines	<input type="text"/>
Poland	<input type="text"/>
Portugal	<input type="text"/>
Romania	<input type="text"/>
Russia	<input type="text"/>

San Marino	<input type="text"/>
Saudi Arabia	<input type="text"/>
Serbia	<input type="text"/>
Singapore	<input type="text"/>
Slovakia	<input type="text"/>
Slovenia	<input type="text"/>
South Africa	<input type="text"/>
Spain	<input type="text"/>
Sri Lanka	<input type="text"/>
Sweden	<input type="text"/>
Switzerland	<input type="text"/>
Taiwan, province of China	<input type="text"/>
Thailand	<input type="text"/>
Turkey	<input type="text"/>
United Kingdom	<input type="text"/>
United States	<input type="text"/>
Uruguay	<input type="text"/>
Venezuela	<input type="text"/>
Vietnam	<input type="text"/>
Please, specify country names	No.: <input type="text"/>
	Text: <input type="text"/>

57) HPC-Cord shipped to the following countries



Own country	<input type="text"/>
Afghanistan	<input type="text"/>
Argentina	<input type="text"/>
Armenia	<input type="text"/>
Australia	<input type="text"/>
Austria	<input type="text"/>
Belarus	<input type="text"/>
Belgium	<input type="text"/>
Brazil	<input type="text"/>
Bulgaria	<input type="text"/>
Canada	<input type="text"/>
Chile	<input type="text"/>
China	<input type="text"/>
China Hong Kong	<input type="text"/>
Colombia	<input type="text"/>
Costa Rica	<input type="text"/>
Croatia	<input type="text"/>
Cuba	<input type="text"/>
Cyprus	<input type="text"/>

Czech Republic	<input type="text"/>
Denmark	<input type="text"/>
Ecuador	<input type="text"/>
Egypt	<input type="text"/>
Estonia	<input type="text"/>
Finland	<input type="text"/>
France	<input type="text"/>
Georgia	<input type="text"/>
Germany	<input type="text"/>
Greece	<input type="text"/>
Hungary	<input type="text"/>
India	<input type="text"/>
Iran	<input type="text"/>
Ireland	<input type="text"/>
Israel	<input type="text"/>
Italy	<input type="text"/>
Japan	<input type="text"/>
Jordan	<input type="text"/>
Korea	<input type="text"/>
Latvia	<input type="text"/>
Liechtenstein	<input type="text"/>

Lithuania	<input type="text"/>
Malaysia	<input type="text"/>
Mexico	<input type="text"/>
Netherlands	<input type="text"/>
New Zealand	<input type="text"/>
Norway	<input type="text"/>
Oman	<input type="text"/>
Pakistan	<input type="text"/>
Philippines	<input type="text"/>
Poland	<input type="text"/>
Portugal	<input type="text"/>
Romania	<input type="text"/>
Russia	<input type="text"/>
San Marino	<input type="text"/>
Saudi Arabia	<input type="text"/>
Serbia	<input type="text"/>
Singapore	<input type="text"/>
Slovakia	<input type="text"/>
Slovenia	<input type="text"/>
South Africa	<input type="text"/>
Spain	<input type="text"/>

Sri Lanka	<input type="text"/>
Sweden	<input type="text"/>
Switzerland	<input type="text"/>
Taiwan, province of China	<input type="text"/>
Thailand	<input type="text"/>
Turkey	<input type="text"/>
United Kingdom	<input type="text"/>
United States	<input type="text"/>
Uruguay	<input type="text"/>
Venezuela	<input type="text"/>
Vietnam	<input type="text"/>
Unknown, Please specify	No.: <input type="text"/> Text: <input type="text"/>
58) DLI shipped to the following countries	<input type="text"/>
Own country	<input type="text"/>
Afghanistan	<input type="text"/>
Argentina	<input type="text"/>
Armenia	<input type="text"/>
Australia	<input type="text"/>
Austria	<input type="text"/>
Belarus	<input type="text"/>

Belgium	<input type="text"/>
Brazil	<input type="text"/>
Bulgaria	<input type="text"/>
Canada	<input type="text"/>
Chile	<input type="text"/>
China	<input type="text"/>
China Hong Kong	<input type="text"/>
Colombia	<input type="text"/>
Costa Rica	<input type="text"/>
Croatia	<input type="text"/>
Cuba	<input type="text"/>
Cyprus	<input type="text"/>
Czech Republic	<input type="text"/>
Denmark	<input type="text"/>
Egypt	<input type="text"/>
Equador	<input type="text"/>
Estonia	<input type="text"/>
Finland	<input type="text"/>
France	<input type="text"/>
Georgia	<input type="text"/>
Germany	<input type="text"/>

Greece	<input type="text"/>
Hungary	<input type="text"/>
India	<input type="text"/>
Iran	<input type="text"/>
Ireland	<input type="text"/>
Israel	<input type="text"/>
Italy	<input type="text"/>
Japan	<input type="text"/>
Jordan	<input type="text"/>
Korea	<input type="text"/>
Latvia	<input type="text"/>
Liechtenstein	<input type="text"/>
Lithuania	<input type="text"/>
Malaysia	<input type="text"/>
Mexico	<input type="text"/>
Netherlands	<input type="text"/>
New Zealand	<input type="text"/>
Norway	<input type="text"/>
Oman	<input type="text"/>
Pakistan	<input type="text"/>



Philippines	<input type="text"/>
Poland	<input type="text"/>
Portugal	<input type="text"/>
Romania	<input type="text"/>
Russia	<input type="text"/>
San Marino	<input type="text"/>
Saudi Arabia	<input type="text"/>
Serbia	<input type="text"/>
Singapore	<input type="text"/>
Slovakia	<input type="text"/>
Slovenia	<input type="text"/>
South Africa	<input type="text"/>
Spain	<input type="text"/>
Srilanka	<input type="text"/>
Sweden	<input type="text"/>
Switzerland	<input type="text"/>
Taiwan	<input type="text"/>
Thailand	<input type="text"/>
Turkey	<input type="text"/>
United Kingdom	<input type="text"/>
United States	<input type="text"/>
Uruguay	<input type="text"/>
Venezuela	<input type="text"/>
Vietnam	<input type="text"/>
Unknown	<input type="text"/>

## 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/1Rsolj-JMkBMBfDAmvXL29QinmB\\_9Nsnf/view](https://drive.google.com/file/d/1Rsolj-JMkBMBfDAmvXL29QinmB_9Nsnf/view)

## References

1. WMDA. Donation: the basics [Available from: <https://www.wmda.info/donor/basics-donation/>.
2. cell hs. NCI Dictionary of Cancer Terms [Available from: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/hematopoietic-stem-cell>.
3. blood p. NCI Dictionary of Cancer Terms [Available from: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/peripheral-blood>.
4. WMDA. The basics of transplantation [Available from: <https://www.wmda.info/patients/basics-transplantation/>.
5. infusion dl. NCI Dictionary of Cancer Terms [Available from: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/donor-lymphocyte-infusion>.
6. matching H. Be The Match [Available from: <https://bethematch.org/patients-and-families/before-transplant/find-a-donor/hla-matching/>.
7. WMDA. Finding a donor [Available from: <https://www.wmda.info/patients/finding-a-donor/>.
8. Images of countries by This Photo by Unknown Author is licensed under CC BY-SA (Word Office)