



Rare blood: programs in Europe and the impact of demographic changes

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What is Rare blood?

- A blood type is rare when more than 200 donors must be screened to find one compatible donor
- When only 1 person in 1,000 shares the same uncommon phenotype
- If only 1 person in 10,000 → very rare



Rare phenotypes

1. Negative for a high frequency antigen (HFA)
 - Up to 189 high-frequency blood group antigens have been recognized by the ISBT
 - ➔ Homozygosity for a recessive gene, e.g. Kp(b-)
 - ➔ Inheritance of an "inhibitor" gene, e.g. Lu(a-b-)

2. Absence of a whole protein – "Null" phenotypes
 - Rh_{null}, K₀

Rare Gems

Rare phenotypes

3. Unusual combinations of common antigens:
 - R1R1, Fy(a-), Jk(a-), Ss

Alloimmunized patient with such phenotype having anti-c + anti-Fya + anti-Jka + anti-s

R₁ R₁

18%

Fy(a-)

34%

Jk(a-)

23%

S-

11%

$$0.18 \times 0.34 \times 0.23 \times 0.11 = 0.0015$$

Group O: 45%



$$0.0015 \times 0.45 = 0.0006 = 0.06\%$$

$$6 \text{ in } 10.000 = 1 \text{ donor in } 1.666$$

Rare phenotypes and Ethnicity

There are certain ethnic groups where certain blood types are more common:



- U-, Fy(a-b-) and Js(b-) → African descent
- Jk(a-b-) → Polynesian and Finnish
- Di(b-) → Hispanics (Latino Americans)
- Kp(b-) and Vel - → Caucasians
- Jr(a-) and Co(a-b-) → Roma people
- Dr(a-) → Russian Jews
- In(b-) → Indian, Pakistani, Iranian

How can we find rare blood donors?

- Through screening programs
- Former patients identified as lacking a high-prevalence antigen because of the presence of the corresponding alloantibody in their serum
→ can be recruited as rare donors
- Testing family members of these patients
Especially siblings → 25% chance of inheriting the same rare phenotype

Screening for rare donors

➤ Using serological methods

→ Mass screening for high-prevalence antigen negative donors

- Often dependent on limited availability of antisera from patients
- Monoclonal antibodies can be used for some antigens

Routine extended typing strategies

- Routine Rh typing (D, C, c, E, e) facilitates the detection of r'r', r''r'', Rh_{null}, D-- and other Rh variants
- Cellano typing of all K+ donations
- Extended phenotyping of repeat blood donors (Fy^a, Fy^b, Jk^a, Jk^b, M, N, S and s) increase availability of RBCs negative for multiple common antigens

Screening for rare donors

➤ Using genotyping methods

- Molecular basis of almost all rare blood group phenotypes known
- Molecular blood group screening approaches can be used to test large numbers of donors economically for several rare blood group alleles (*KEL*02*, *KEL*04*, *YT*01*, *CO*01*, *LU*02*, *VEL* and *JR*01*)
- Several commercial blood group genotyping platforms available

Unfortunately, it is not always meaningful to screen for every rare blood group → e.g. O_h (Bombay), Rh_{null} or the K₀ phenotypes

The screenshot shows the ISBT website interface. At the top left is the ISBT logo (International Society of Blood Transfusion). To the right are navigation links: Home, Knowledge & Education, Working Parties, and Events. The main heading is 'Rare Donors' in a red banner, with a sub-heading 'Chairperson: Christine Lomas-Francis'. Below this, under the 'Aim' section, is the text: 'Enhance international collaboration to enable provision of rare blood to patients'. A paragraph follows: 'In general, the majority of the population has one of the ABO blood groups and is Rh positive or negative. There are >200 minor blood groups and >600 known antigens besides A, B and Rh. Because blood groups are distributed differently in different ethnic groups, finding a blood donor with the exact same blood type is a huge challenge. A rare blood donor phenotype occurs 1/1000 and includes high-frequency-antigen-negative and multiple-common-antigen-negative blood groups. Examples of rare blood types include Rhnul, Bombay (Oh) and Junior (jr) a-. To prevent shortages of rare donor blood units, red cell donations can be frozen for future use. Therefore, it is of high importance to have an accurate international database of rare blood donors to ensure that patients who require lifesaving rare blood units are able to receive them.'

TRANSFUSION TODAY

ISBT WORKING PARTY ON RARE DONORS

The ISBT Working Party on Rare Donors was formed in 1984 to promote international collaboration with regard to the provision of donor blood with rare phenotypes.

The image shows the cover of the journal 'Immunohematology'. The title is at the top in white text over a blue and green globe. Below the globe is a grid of 20 national flags from various countries including Germany, Brazil, Canada, China, Finland, France, Iran, Israel, Italy, Japan, Hungary, New Zealand, Singapore, South Africa, Spain, Switzerland, Austria, and the United States. Below the flags, the text reads 'Part I: International Rare Donor Programs'. At the bottom, it says 'Journal of Blood Group Serology and Molecular Genetics', 'VOLUME 32, NUMBER 1, 2016', and the American Red Cross logo.

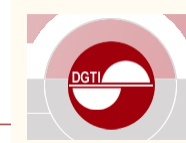
Rare blood donor Programs in Europe

Common traits:

- All donors donate on a voluntary basis and no incentives are given to rare blood donors
- When rare blood is needed, there is an increasing tendency to use of fresh unit from one of the available rare donors rather than a thawed unit
- Shortage of rare donors with non-Caucasian phenotypes



The DGTI Rare donor program



Seltene
Blutgruppen

Arbeitsgruppe Seltene Blutgruppen
German Rare Donor Program

- The Working Party on Rare Donors of the German Society of Transfusion Medicine and Immunohematology (DGTI) represents the German-speaking countries of Switzerland, Germany and Austria.

- A joint database for rare donors was developed and implemented in 2011 in Berne, Switzerland
- Maintained by the Swiss Red Cross Blood Service

INTERREGIONALE BLUTSPENDE SRK
TRANSFUSION INTERREGIONALE CRS

Blutspenden Wann und wo Spenden Über uns Medien & Services Blutversorgung Labordiagnostik F&E / Lehre (Eng.)

Rare Donors - Seltene Spender - Rare donneurs

Welcome on the «DGTI Rare Donors register»

Erythrocytes from blood donors and patients express many different antigens (blood groups), if antibodies against these antigens are present, the donor blood must be compatible with the patient otherwise the patient could suffer from transfusion reactions.

For patients with the most common blood groups a rapid and efficient supply of compatible erythrocyte concentrates is taken for granted.

There is however a special category of patients who possess antibodies against rare blood group antigens. The opportune supply of blood products to treat these patients often requires extensive measures, such as, the mobilisation of blood donors on a national and often an international scale. Examples of such blood groups are the absence of high frequency antigens such as, k, Kp(b), Lu(b), Co(a), Vel, Yt(a), P, Lan or U, or the presence of a rare phenotype such a Ko, Lu(a-b-), Jk(a-b-)and Rh null.

For this reason several years ago we set up a database of blood donors with rare blood groups. Since 2005 the Interregional Blood Transfusion Service SRC Ltd. runs this database on behalf of the Swiss Blood Transfusion Service SRC. All Swiss regional blood transfusion services participate in the database by registering, on a 3x per year basis, all blood donors with rare blood groups from their region.

At the same time a coordinated effort and collaboration particularly with other German speaking countries but also with other international partners was set up with the aim to increase, in a cost efficient manner, the supply of suitable blood products for these patients.

In collaboration with the DGTI-working party «rare blood groups» the structure of this database has been updated and elaborated.

Links
To the Database

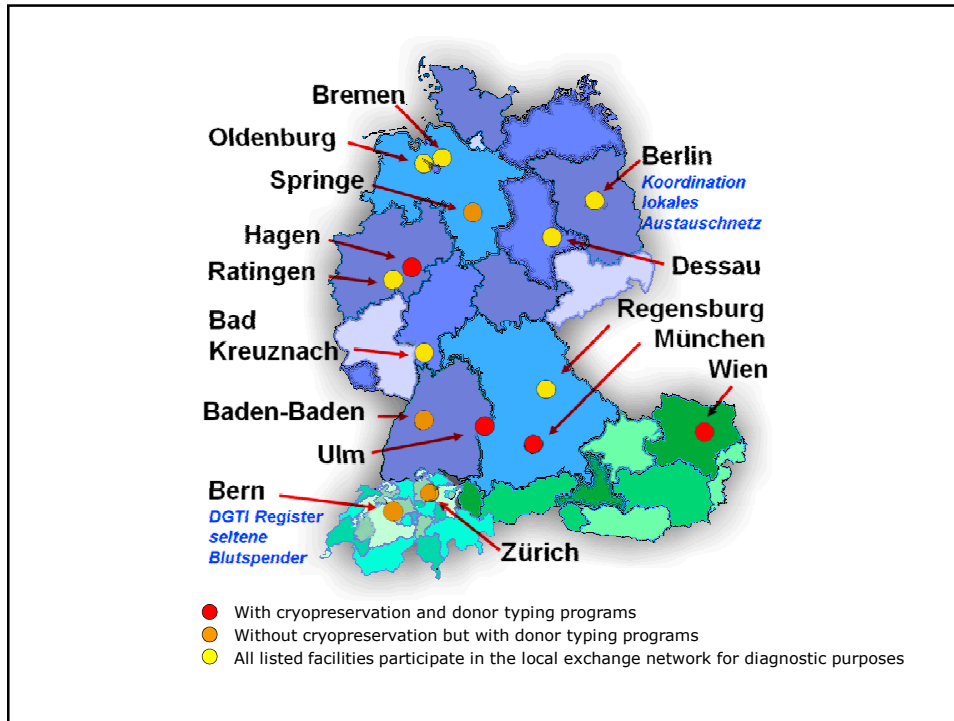
Downloads
Kryoblutbank (PDF)

Kontakt
Hein Hustinx
Interregionale Blutspende SRK AG
Mürtenstrasse 133
3008 Bern
Tel. 0041 31 384 23 54/50
Fax 0041 31 384 23 51
hein.hustinx[at]transfusion.ch

Cryopreserved RBC units

Stand: July 2018 Blood Service		DRK Blutspendedienst West Zentrum Hagen +49-(0)2331-807-0 +49-(0)2331-807-151				DRK Blutspendedienst Baden-Württemberg-Hessen Institut Ulm +49-(0)731-150-610;-600;-536 +49-(0)731-150-602				Österreichisches Rotes Kreuz Institut Wien +43(1)58-900 +43(1)58-900-262				
Blood group system	ISBT number	Phaenotype	0		A		0		A		0		A	
			D+	D-	D+	D-	D+	D-	D+	D-	D+	D-	D+	D-
MNS	002	U-, S-s-												
		U-, S-s-, Fy(a-b-)												
PIPK/Globosid	003/028	p (PP1PK-, Tj-a-)									4		3	
		P-												3
Rh	004	Rh _{null}			5				11	DEL				
		--D--	6											
		CCddee		5			15		5		10		4	
		ccddeE		4			10		4		2		6	
		CCdDEE	2				5		3					
		CCdEE												
Lutheran	005	Lu(b-)	3	4			7	2			6			
		Lu(a-b-), In(Lu)												
		LU-a												
Kell	006	Kell _{null}						1					2	
		KK	6	6			2	2			10	7	4	1
		Kp(b-)	10	9			7	5			15	4		
		Jsl(b-)												
Duffy	008	Fy(a-b-)	6	2			10	3						
Kidd	009	Jk(a-b-)												
Diego	010	Di(b-)												
Yt	011	Yt(a-)	6	4			17	9	3		5			
Dombrock	014	Do(a-)												
		Do(b-)												
		Gy(a-)												
		Hy- / Joa-												
Colton	015	Co(a-)	2	5			3	11	1	2	20		2	
		Co(a-b-)												
Landsteiner- Wiener	016	LWa-												
		LW(a-b-)												
Hh	018	hh (Bombay)	5											
Kx	019	Kx-												
Gerbich	020	Ge-2					1							
JR	032	Jr(a-)					1	1						
Lan	033	Lan-	4							2				
Vel	034	Vel-	7	9			19	7			2		2	

raredonor.bsd-be.ch



- High-throughput molecular methods have been developed and implemented

Jungbauer, C & M Hobel, C & W M Schwartz, D & R Mayr, W. (2011). High-throughput multiplex PCR genotyping for 35 red blood cell antigens in blood donors. *Vox sanguinis*. 102. 234-42.

Portegys J, Rink G, Bloos P, Scharberg E, A, Klüter H, Bugert P: Towards a Regional Registry of Extended Typed Blood Donors: Molecular Typing for Blood Group, Platelet and Granulocyte Antigens. *Transfus Med Hemother* 2018;45:331-340.

- > 1100 donors with rare blood types are listed in the DGTI database

The Finnish national rare donor program



- Managed by the national blood service and reference laboratory
- Operative for over 30 years
- In 2010 → implemented a program for freezing RBCs

Blood types globally rare but more common in Finland:

- Jk(a-b-)
- LW(a-)
- p^k

- Represented in the donor database and in the stock of frozen RBC units → available internationally

- Approx. 130 donors with rare blood types in the registry
→ 70 active donors

The French national rare blood program

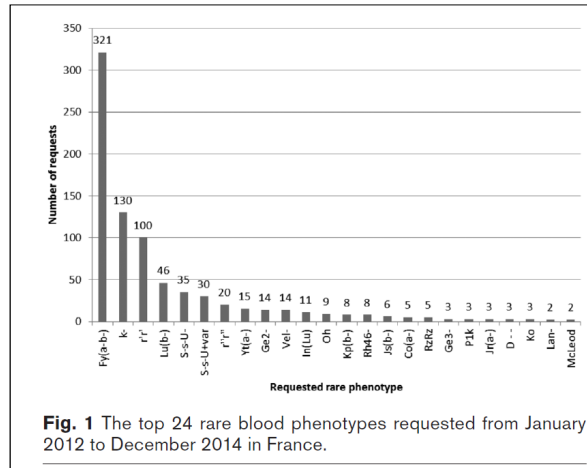


INSTITUT NATIONAL DE LA TRANSFUSION SANGUINE

Centre National de Référence pour les Groupes Sanguins (CNRGS)

- National rare blood donor database implemented in the late 1960s
- Early 1980s → The National Rare Blood Bank was set-up
 - Facility located in Créteil
 - Co-managed by the Immunohematology Reference Laboratory of the CNRGS and the French National Blood Service (EFS)
 - Currently → 6539 cryopreserved blood units

Up to 12,929 individuals with a rare blood phenotype or genotype are listed in the rare blood national registry, including donors and patients



- 43% of patients in need of rare blood units were of African/Caribbean descent → most of them suffered from sickle cell disease (70%)
- 30% of the requested rare cryopreserved units were transfused to sickle cell disease patients

Table 1. International requests supported by the French national rare blood program from 2012 to 2014

Country	Rare phenotype	ABO/Rh/K	Allelantibodies	Number of RBC units provided
Belgium	Yt(a-)	O, D-C-E-c+e+; K-	Anti-Yt ^a , anti-Lu ^a	2
Belgium	Sec- (R ^h R ^h , RH-46)	O, E-c-; K-	Anti-Sec, anti-E	2
Germany	Fy(a-b-)	O, D+C-E-c+e+; K-	Anti-Fy3 suspected	3
Germany	Fy(a-b-)	O, D+C-E-c+e+; K+	Anti-Fy3, anti-C, anti-E, anti-s, anti-P1	3
Germany	S-s-U-	O, D+C-E-c+e+; K-	Anti-U, anti-M	1
Germany	S-s-U-	B, D+C-E-c+e+; K-	Anti-U	11
Germany	r'r'	O, D-C+E-c-e+; K-	Anti-D, anti-c, anti-S	8
Iceland	D--	O, D+C-E-c-e-; K-	Anti-Hr ₀	2
Monaco	Fy(a-b-)	A, D+C-E-c+e+; K-	Anti-Fy3, anti-A1, anti-E, anti-C, anti-Fy ^a , anti-Jk ^a , anti-Lu ^a , antibody to a high-prevalence antigen of undetermined specificity	2 autologous units for elective surgery (no possibility to cryopreserve RBC units in Monaco)
Sweden	S-s-U-	A, D+C-E-c+e+; K-	Anti-U	2
Sweden	S-s-U-	A, D-C-E-c+e+; K-	Anti-U, anti-D	1
Switzerland	GE-2,3	O, D+C-E-c+e+; K-	Anti-Ge2	2
Switzerland	P ¹	A, D+C+E+c+e+	Anti-P	3
Switzerland	O _b (Bombay)	O _b , D+C+E-c+e+; K-	Anti-H	1
United Kingdom	D--	O, D+C-E-c-e-; K-	Anti-Hr ₀	1

The Lombardy Rare Donor Program (LORD-P)

- Established in 2005 as the first regional rare donor program in Italy → a network of 15 blood transfusion services coordinated by the Immunohaematology Reference Laboratory of the Ca' Granda Ospedale Maggiore Policlinico in Milan




- Extensive typing of selected blood donors (age 18-55, history of two or more previous donations)
 - 10.040 active donors with a rare combination of common antigens
 - 579 donors negative for high-prevalence antigens
 - 48 donors with rare Rh phenotype
- The LORD-P registry and blood bank of frozen RBC units has contributed to resolving planned and urgent transfusion needs of immunized patients throughout the country

LORD-P

Table 1. Donors in rare donor program in Italy (2005–2014)


Antigen/phenotype	Number of donors
Yt(a-)	196
Fy(a-b-)	140
k-	129
Co(a-b+)	56
Lu(b-)	44
CCdee (r'r')	31
ocdEE (r''r'')	9
CCDEE (R ₁ R ₂)	6
Kp(b-)	5
Fy(a-b-) Js(b-)	4
PP1P ^a -	2
D--	2
Js(b-)	1
Co(a-b+) Yt(a-)	1
GE--2	1
Total	627

- Since 2010, another regional rare donor program established at the Blood Transfusion Center of Ragusa Hospital in Sicily.




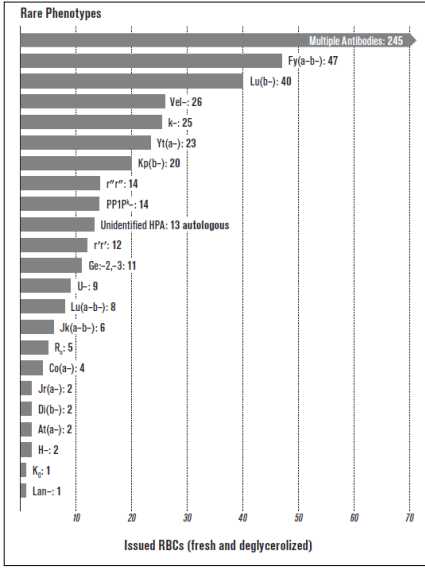
Includes a nationally organized rare donor program in the Netherlands

- In 2006 → Sanquin Bank of Frozen Blood (SBFB), originally part of the European Bank of Frozen Blood of the Council of Europe



- Aprox. 1300 frozen rare blood units stored at the SBFB
- 900 active rare donors, negative for a high-prevalence antigen





Rare Phenotype	Number of Issued RBCs
Multiple Antibodies	245
Fy(a-b-)	47
Lu(b-)	40
Vel-	26
k-	25
Yt(a-)	23
Kp(b-)	20
r'r ⁺	14
PP1P ⁺	14
Unidentified HPA: 13 autologous	13
r'r ⁻	12
Ge-2-3-	11
U-	9
Lu(a-b-)	8
Jk(a-b-)	6
R ₁	5
Co(a-)	4
Jr(a-)	2
Dl(b-)	2
At(a-)	2
H-	2
K ₁	1
Lan-	1

Overview of the phenotypes of issued units of rare RBCs in the Netherlands. Period 2008-2014

The Spanish program for rare blood donors

- Created in 2005 as a cooperative group of 5 Blood Transfusion Centers (BTCs) involved in the management of rare blood phenotypes
- Supported by the Spanish Society of Blood Transfusion (SETS) ⇒ Established a Working Party on rare blood

- Currently, a network of 8 BTCs
 - 5 collecting and cryopreserving rare blood units
 - 3 providing a list of rare blood donors



Inventory of cryopreserved units of rare blood - 2018

ISBT	Phenotype	A+	A-	O+	O-	AB+	AB-	B+	B-	Total
KEL:-2	KK	41	20	93	79			3		236
KEL:-4	Kp(a+b-)	28	3	35	64	1			6	137
LU:-2	Lu(a+b-)	16	6	79	70	1				172
LU:-1,-2	Lu(a-b-)			7	2					9
PP1P^k-	Tj(a-)	12		39	2			19		72
VEL:-1	Vel -	4	7	16	13	1				41
FY:-1, -2	Fy(a-b-)	8	9	33	52			1		103
JK:-1, -2	Jk(a-b-)		5		3					8
CO: -1	Co(a-)	8	8	38	9					63
DI:-2	Di(b-)			24				2		26
YT:-1	Yt(a-)	2	5	29	14					50
JR:-1	Jr(a-)	5	14	9	11					29
JMH-	JMH-			6	2					8
LAN:-1	Lan -			6	2					8
MNS:-3,-4	S- s-	1		6	3		1			11
MNS:-5	U-	1		8	3					12
	Bombay(Oh)				8					8
	r'r'		5		25					30
	r''r''		8	1	7					16
	Rz Rz	3		5						8
	-D-/-D-	9		5						14
1061										

- More than 900 donors identified with rare blood types
- Integrated into the International Rare Donor Panel (IRDP) in 2009

Rare blood units distributed through International requests

Country	Rare Phenotype	Antibody	Units
Portugal	- D-	Anti-Rh17	1
Norway	K ₀	Anti-Ku	1
Israel	Vel -	Anti-Vel	1
Sweden	Di(b-)	Anti-Di ^b	5
Sweden	Jr(a-)	Anti-Jr ^a	1
UK	Jr(a-)	Anti-Jr ^a	4
Japan	PP1P ^k -	Anti-PP1P ^k	8
Iran	Rh _{null}	Anti-Rh29	2
TOTAL			23

Period 2010-2017

Rare blood units imported -Period 2010-2017

Country	Rare Phenotype	Antibody	Units
Germany Japan	K ₀	Anti-Ku	2
France	(R ^{NRN} , RH:-46)	Anti-Sec, anti-E	2
TOTAL			4

	Age	History	ABO	IH study	Rh	Antibody	R ^N Phenotype
Patient haemolytic crisis	18	SCD Transfused No extended phenotype	B+	Panaglutinine Auto - DAT -	D+ C+ c- E- e+w	Anti-Sec (anti-Rh46)	Rh:32,-46

- Antibody unreactive with D-- and Rh_{null} RBCs
- The patient has been transfused on 5 occasions in the last 6 years with a total of 11 blood units: 6 D--, 1 Rh_{null}, 3 R^{NRN}

- RH:-46 phenotype is extremely rare in Caucasians
- Incidence about 1% in Africant descent population

The United Kingdom program for rare blood donors

- The UK national rare donor panel (NRDP) was first established in 1952
- In 1967, coinciding with the development of the WHO International Rare Donor Panel (IRDP), the IBGRL revised and updated the NRDP
- Late 1970s → Mass screening program initiated at the National Blood Service South London center
 - Serological screening using microplate methodology
 - Aimed to identify donors negative for high-prevalence antigens
 - Developed over the years → largest source of rare donors in the UK
 - Samples from donors identified as having a rare phenotype are sent to the IBGRL for confirmation testing

The current UK NRDP consists of approx. 2000 active donors

- A selection of rare units are frozen and stored at the UK National Frozen Blood Bank (NFBB) → situated at the NHSBT Liverpool center
 - Donations are sent to the NFBB from all the NHSBT centers across England but also from the Scottish and Welsh blood services
 - Upon freezing, units are stored between -60°C and -80°C → shelf life of 10 years
 - For some extraordinary rare phenotypes, the units may be kept beyond the assigned expiry date
 - The NFBB has approximately 600 frozen rare units

World Health Organization (WHO) International Rare Donor Panel (IRDP)

Bristol, United Kingdom

<https://safe.nhsbt.nhs.uk/RareDonor/Search/Search.aspx>



International and UK National Panels of Rare Blood Donors

This area is restricted to authorized professional users only; users should enter their username and password in the login box.

[Click here to search for a rare donor](#)

Blood Centre staff and other professionals requiring information regarding donors of a specific rare blood group should contact:

Nicole Thornton: nicole.thornton@nhsbt.nhs.uk
Phone: +44 (0) 117 921 7587 FAX: +44 (0) 117 912 5796

- Dr Arthur E. Mourant (1965)
- First panel in 1968 with 300 donors from 10 countries

- >8000 registries of blood donors with a rare phenotype
- 60 centers
- 27 countries

NHS Blood and Transplant

Search Rare Donor Panel

Panel: All ABO: O Only Contributor: ALL CONTRIBUTORS Logged in as rare My Details Logout Search Reset

Rarity

<input type="radio"/> [NONE]	<input type="radio"/> CDE/CDE	<input type="radio"/> CdE/CdE	<input type="radio"/> CwD-/CwD-	<input type="radio"/> -D-/D-	<input checked="" type="radio"/> Rh Null
<input type="radio"/> Rh-51	<input type="radio"/> Rh-46	<input type="radio"/> hrB-	<input type="radio"/> hrS-	<input type="radio"/> LW(a-b+)	<input type="radio"/> LW(a-b-)
<input type="radio"/> S-s-U-	<input type="radio"/> S-s-U+	<input type="radio"/> pp	<input type="radio"/> Pk	<input type="radio"/> Lu(a+b-)	<input type="radio"/> Lu(a-b-)
<input type="radio"/> Kp(a+b-)	<input type="radio"/> Js(a+b-)	<input type="radio"/> Ko	<input type="radio"/> K-11	<input type="radio"/> Fy(a-b-)	<input type="radio"/> Jk(a-b-)
<input type="radio"/> Di(b-)	<input type="radio"/> I-	<input type="radio"/> Yt(a-)	<input type="radio"/> Sc-1	<input type="radio"/> Co(a-)	<input type="radio"/> Co(a-b-)
<input type="radio"/> Vel-	<input type="radio"/> Ge-	<input type="radio"/> Lan-	<input type="radio"/> Lan(+)	<input type="radio"/> Do(a-)	<input type="radio"/> Do(b-)
<input type="radio"/> Gy(a-)	<input type="radio"/> Hy-	<input type="radio"/> Jo(a-)	<input type="radio"/> At(a-)	<input type="radio"/> Jr(a-)	<input type="radio"/> In(b-)
<input type="radio"/> Tc(a-)	<input type="radio"/> Cr(a-)	<input type="radio"/> Er(a-)	<input type="radio"/> Ok(a-)	<input type="radio"/> JMH-	<input type="radio"/> En(a-)
<input type="radio"/> KL-					

UK Panel Only

Cde/Cde K- cdE/cdE K- CDe/CDe KK cDE/cDE KK cde/cde KK

Additional Antigen Search

C	Cw	c	D	E	e	M	N	S	s	U	P1	Lua	K	k	Kpa	Jsa	Lea	Leb	Fya	Fyb	Jka	Jkb	Cob
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rare Donor Search found 3 possible matches.

Panel Code: **B09923**
 Contributor: **BELFAST**
 Contributor Donor Code: **R0177465**

ABO Group: **O**
 Rarities: **Rh Null**

Antibody:
 Grouped at BGRL: **Yes**

C	Cw	c	D	Du	E	e	M	N	S	s	U	P1	P	PK	Lu _a	Lu _b	K	k	Kp _a	Kp _b	Js _a	Js _b	Le _a	Le _b	Fy _a	Fy _b	Jk _a	Jk _b	
-	-	-	-	-	-	+	-	+	+	+	+						+	+	-					-	+	+	-	-	+

Panel Code: **I09674**
 Contributor: **SOUTH AFRICA**
 Contributor Donor Code: **FOURIS00060**

ABO Group: **O**
 Rarities: **Rh Null**

Antibody: **Anti-Rh29**
 Grouped at BGRL: **No**

C	Cw	c	D	Du	E	e	M	N	S	s	U	P1	P	PK	Lu _a	Lu _b	K	k	Kp _a	Kp _b	Js _a	Js _b	Le _a	Le _b	Fy _a	Fy _b	Jk _a	Jk _b
-	-	-	-	-	-	+		+	+	+							-	+	-	+	-	+	-	+	-	+	+	-

Panel Code: **K12927**
 Contributor: **NATIONAL FROZEN BLOOD BANK U.K**
 Contributor Donor Code: **Rhnull**

ABO Group: **O**
 Rarities: **Rh Null**

Antibody:
 Grouped at BGRL: **No**

C	Cw	c	D	Du	E	e	M	N	S	s	U	P1	P	PK	Lu _a	Lu _b	K	k	Kp _a	Kp _b	Js _a	Js _b	Le _a	Le _b	Fy _a	Fy _b	Jk _a	Jk _b	
-	-	-	-	-	-																								

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Impact of demographic changes

- ▶ Due to increasing migration, blood collection establishments are increasingly required to supply blood for patients from different ethnic backgrounds
- ▶ People from minority groups are generally less actively involved in the blood supply than people from the native population
- ▶ Different ethnic groups can differ in blood group antigen expression, which can cause alloimmunisation if donor and patient are not from the same ethnic background

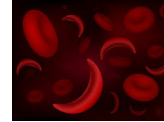
Common West African RBC phenotype:
 D+ C- E- c+ e+, K- k+, S- s+, Fy(a-b-), Jk(a+b-)
 → 30-40% of African donors
 → 1:1000 Caucasian donors

The less common blood groups pose challenges especially if a patient requires regular blood transfusions



Genetic blood disorders

- ▶ Sickle-cell disease (SCD)
- ▶ Thalassemia



- Sickle-cell anaemia mostly affects people of African origin
- Thalassemia is more common among Mediterranean people

- ▶ The incidence of alloimmunization to RBC antigens in patients with SCD has been reported to range from 30% to 40%, which is markedly higher than what is seen in the general population (roughly 2-5%)

- ▶ To explore the problems associated with migration and minority populations, the Missing Minorities (MIMI) Project was initiated by the European Blood Alliance in 2012

Diversity and Equality in Health and Care (2016) 13(1): 138-145 2016
 "Missing Minorities – A survey based description of the current state of minority blood donor recruitment across 23 countries"

Demographic Data

Percentage of people from minority groups with a different blood genotype varied greatly among countries

- France → 25%
- Spain → 16%
- England & North Wales → 14%
- Netherlands → 12%

- ▶ Many blood services were not able to provide data on the representation of minority groups in their donor database
- ▶ Minorities mostly underrepresented

It is of utmost importance that people from minority groups with different extended red cell typing are represented in the blood donor base. Diversifying the donor base is necessary to ensure that all persons in need of blood products have an equal chance of finding matching products



Methods used to recruit minority donors

- Social media and local television
- Recruitment in religious organisations (e.g. mosques) or minority organisations
- Recruitment using individual spokespersons from specific minority groups
- Leaflets

Obstacles to minority recruitment

- High deferral percentage
- Socio-cultural issues
- Problems regarding the language barrier
- Hard to reach target audience

Specially targeted campaigns

NHS
Blood and Transplant

Home / Why give blood / Who can give blood / The donation process / Where

Home / Why give blood / The need for blood / Black, Asian and minority ethnic communities

Black, Asian and minority ethnic communities

We need donors from all communities and ethnic backgrounds to donate blood so we can meet the needs of all patients in England now and in the years to come. Black, Asian and minority ethnic donors are specifically needed right now because:

- some patients who receive frequent blood transfusions need blood to be closely matched to their own
- a number of blood conditions, like sickle cell disease which is treated through blood transfusions, most commonly affect black, Asian and minority ethnic people
- the best match typically comes from blood donors from the same ethnic background.

Specially targeted campaigns



More blood donors of African origin needed

2/23/2018 10:25

The Blood Service has launched a campaign to find more blood donors of African origin. Currently there are not enough of them in proportion to the population group and number of patients.

YOU ARE NEEDED

Second-generation Africans needed in particular

As a result of increasing immigration, other Western countries have begun to take similar action, too.

"Immigration into Finland is so far relatively low compared to many other European countries, but in the Helsinki region especially, a significant and increasing proportion of the population is of African origin. By active recruiting, we aim to be better prepared for future needs," says Ekblom-Kullberg.



The Blood Service hopes to get new blood donors especially among people of African origin who were born in Finland, so-called second-generation Africans. Blood donors must be able to fill in the health questionnaire in Finnish, Swedish or English. Donors who were born or lived in a malarial area under the age of 5 will be tested for malaria antibodies the first time.

Special campaigns



Photo courtesy of OneBlood

2 year old Zainab Mughal is battling neuroblastoma. To support her through her treatments for this aggressive cancer, Zainab must receive **blood transfusions**.

HOWEVER, Zainab cannot receive blood from donors who have the Indian B antigen as she is **Indian B antigen-negative**. 96% of people have the Indian B antigen. The greatest chance of finding compatible blood for Zainab is in people of **Indian, Pakistani and Iranian heritage**.

If you have this heritage, and you are **blood Type O or A**, you can help by donating at any blood drive and telling our staff of your heritage and to **tag your blood donation** so that your blood will receive this additional antigen testing.



Thank you for your attention