49 human blood group systems

Red cell antigens in the ISBT nomenclature

Select a system symbol to view its full antigen list.

System			Antigen numbers within each system · selected entries												Total in system
ISBT	Symbol	Name	001	002	003	004	005	006	007	008	009	010	011	012	
001	ABO	ABO	A	B	A,B	A1									4
002	MNS	MNS	M	N	S	s	U	He	Mi^{a}	M^{c}	Vw	Mur	M^{g}	Vr	50
003	P1PK	P1PK	P1		P^{k}	NOR									3
004	RH	Rh	D	C	E	c	e	f	Ce	C^{w}	C^{x}	V	E^{w}	G	56
005	LU	Lutheran	Lu^{a}	Lu^{b}	Lu3	Lu4	Lu5	Lu6	Lu7	Lu8	Lu9		Lu11	Lu12	30
006	KEL	Kell	K	k	Kp^{a}	Kp^{b}	Ku	Js^{a}	Js^{b}			Ul^{a}	K11	K12	38
007	LE	Lewis	Le^{a}	Le^{b}	Le^{ab}	Le^{bH}	ALe^{b}	BLe^{b}							6
008	FY	Duffy	Fy^{a}	Fy^{b}	Fy3		Fy5	Fy6							5
009	JK	Kidd	Jk^{a}	Jk^{b}	Jk3										3
010	DI	Diego	Di^{a}	Di^{b}	Wr^{a}	Wr^{b}	Wd^{a}	Rb^{a}	WARR	ELO	Wu	Bp^{a}	Mo^{a}	Hg^{a}	24
011	YT	Yt	Yt^{a}	Yt^{b}	YTEG	YTLI	YTOT	YTGT							6
012	XG	Xg	Xg^{a}	CD99											2
013	SC	Scianna	Sc1	Sc2	Sc3	Rd	STAR	SCER	SCAN	SCAR	SCAC	SCAB*	SCIBB		11
014	DO	Dombrock	Do^{a}	Do^{b}	Gy^{a}	Hy	Jo^{a}	DOYA	DOMR	DOLG	DOLC	DODE			10
015	CO	Colton	Co^{a}	Co^{b}	Co3	Co4									4
016	LW	Landsteiner-Wiener					LW^{a}	LW^{ab}	LW^{b}	LWEM					4
017	CH/RG	Chido/Rodgers	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	WH				Rg1	Rg2	9
018	H	H	H												1
019	XK	Kx	Kx												1

The cells show selected antigens. An asterisk marks provisional status. For CH/RG, WH (007), Rg1 (011), and Rg2 (012) follow the printed ISBT table. The digital record uses different suffixes.

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Red cell antigens in the ISBT nomenclature

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System			Antigen numbers within each system · selected entries												Total in system
ISBT	Symbol	Name	001	002	003	004	005	006	007	008	009	010	011	012	
020	GE	Gerbich		Ge2	Ge3	Ge4	Wb								13
021	CROM	Cromer	Cr^{a}	Tc^{a}	Tc^{b}	Tc^{c}									21
022	KN	Knops	Kn^{a}	Kn^{b}	McC^{a}	SI1									14
023	IN	Indian	In^{a}	In^{b}	INFI	INJA									6
024	OK	Ok	Ok^{a}	OKGV	OKVM										3
025	RAPH	Raph	MER2												1
026	JMH	John Milton Hagen	JMH	JMHK	JMHL										8
027	I	I	I												1
028	GLOB	Globoside	P			PX2	EXTB								3
029	GIL	Gill	GIL												1
030	RHAG	Rh-associated glycoprotein	Duclos	Ol^{a}	DSLK		Kg	SHER	THIN*						6
031	FORS	FORS	FORS												1
032	JR	JR	Jr^{a}												1
033	LAN	LAN	Lan												1
034	VEL	Vel	Vel												1
035	CD59	CD59	CD59												1
036	AUG	Augustine	Aug	At^{a}	ATML	ATAM									4
037	KANNO	Kanno	KANNO												1
038	SID	SID	SID												1

The total covers the entire system, including positions beyond 012. An asterisk marks provisional status. The six-digit ID combines the system number and the antigen number. For example, **004001** identifies antigen D in the Rh system.

49 human blood group systems

Red cell antigens in the ISBT nomenclature

Select a system symbol to view its full antigen list.

System			Antigen numbers within each system · selected entries												Total in system
ISBT	Symbol	Name	001	002	003	004	005	006	007	008	009	010	011	012	
039	CTL2	CTL2	VER	RIF	Cs^{a}	Cs^{b}	BROS								5
040	PEL	PEL	PEL												1
041	MAM	MAM	MAM												1
042	EMM	EMM	Emm												1
043	ABCC1	ABCC1	WLF												1
044	ER	Er	Er^{a}	Er^{b}	Er3	ERSA	ERAMA								5
045	CD36	CD36	CD36.1												1
046	ATP11C	ATP11C	LIL												1
047	MAL	MAL	AnWj												1
048	PIGZ	PIGZ	GWADA*												1
049	JAMA	JAMA	JIMI												1

374 entries across 49 systems

Another 27 records belong to collections and series. The catalog lists 401 records, including the provisional GWADA* entry. Release v21 reports 400 approved records across the database.

Catalog overview Release v21 summary

049 JAMA · JIMI antigen

The JIMI antigen (049001) is carried on the JAM-A protein, encoded by **F11R**. In the study reported by ISBT, the antibody bound both red cells and platelets.

ISBT announcement on JAMA

Blood component compatibility

The relevant antigens and antibodies depend on the component being transfused

Red cells

Routine testing includes ABO and RhD typing, an antibody screen, and a crossmatch. If a clinically significant antibody is identified, the selected unit must lack the corresponding antigen.
Canadian Blood Services

Platelets

ABO-identical platelets are preferred. In immune refractoriness, unit selection takes into account antibodies to HLA class I or to human platelet antigens (HPA). Residual RhD-positive red cells in the unit can trigger anti-D in an RhD-negative recipient.
Canadian Blood Services

Leukocytes and granulocytes

Neutrophils express HLA and carry five human neutrophil antigen systems (HNA-1 to HNA-5). ABO compatibility matters in granulocyte transfusion because the concentrate contains residual donor red cells.
American Red Cross Canadian Blood Services

Other cells and HLA

Lymphocytes and monocytes express HLA. In allogeneic hematopoietic stem cell transplantation, HLA compatibility is a primary criterion for donor selection. ABO differences are managed separately.
NCBI Bookshelf EBMT Handbook

Plasma and ABO compatibility

Donor plasma antibodies can attack the **recipient's** red cells. Anti-A in group O plasma can cause hemolysis in a group A recipient.

Recipient ABO	Donor red cells	Donor plasma
O	O	O, A, B, AB
A	A, O	A, AB
B	B, O	B, AB
AB	AB, A, B, O	AB

An ABO-identical unit is preferred. AB plasma is ABO-compatible with all four major groups. Fresh frozen plasma is matched by ABO regardless of RhD.
Australian Red Cross Lifeblood

Reactions to ABO-compatible plasma

Donor anti-HLA and anti-HNA can contribute to transfusion-related acute lung injury (TRALI). In rare cases, severe allergic reactions are associated with IgA deficiency and anti-IgA in the recipient.
Lifeblood · TRALI Canadian Blood Services · IgA

Whole blood

Compatibility involves both donor red cell antigens and donor plasma antibodies. Emergency protocols may use specially selected group O whole blood with low titers of anti-A and anti-B.
Canadian Blood Services

Sickle cell disease. ASH recommends matching red cells for Rh (C and E) and Kell (K) in addition to ABO/RhD.

ASH clinical practice guidelines