Proteínas recombinantes solubles de grupo sanguíneo

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Generalitat de Catalunya

TOCA DONAR
TOCA REBRE
VIDA

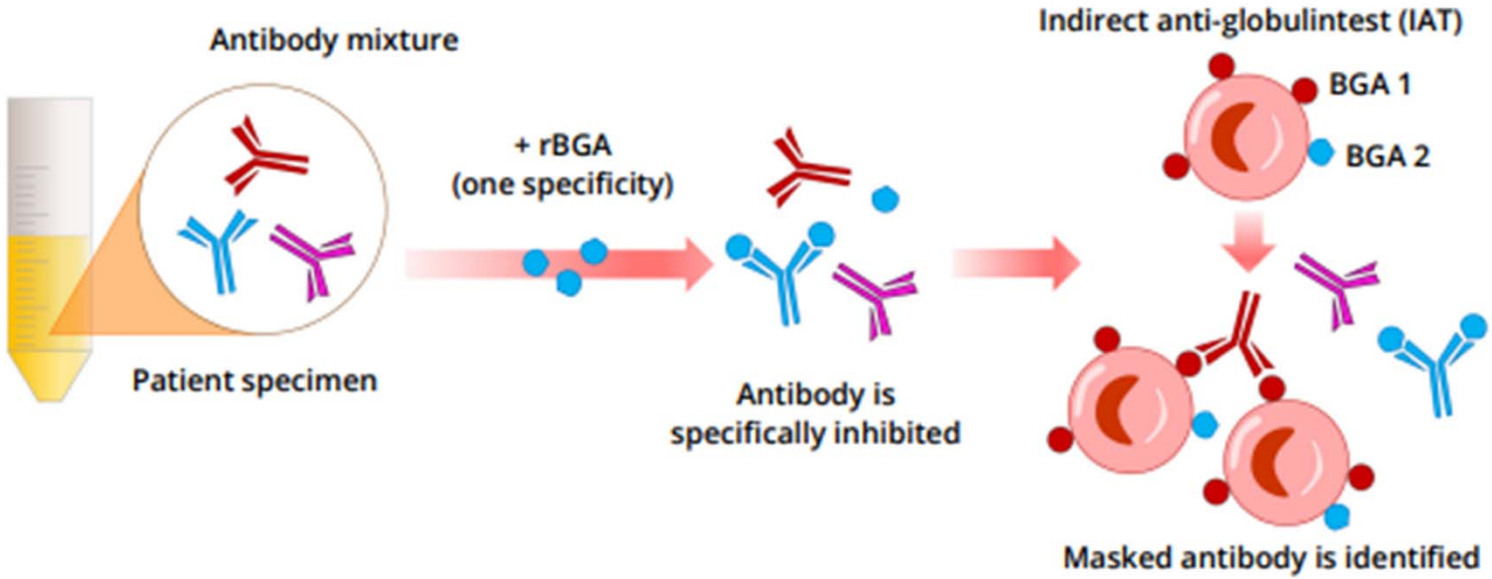
Índex

1

¿Qué es una proteína recombinante soluble?

rBGP

Formas solubles de antígenos de membrana eritrocitaria



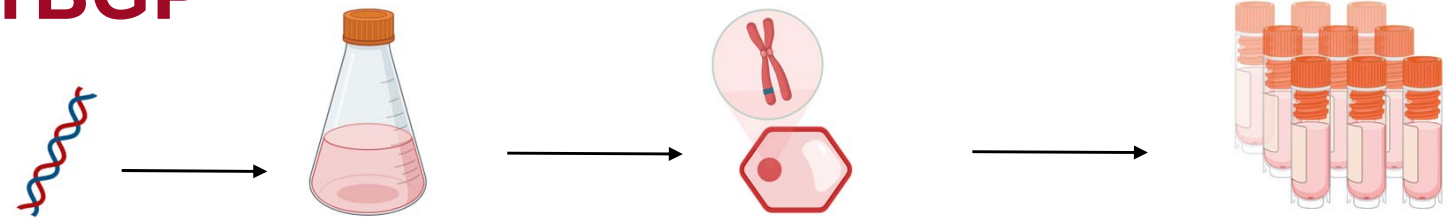
rBGA: recombinant Blood Group **Antigens** → antígenos recombinantes de grupos sanguíneos

rBGP: recombinant Blood Group **Proteins** → proteínas recombinantes de grupos sanguíneos

https://www.inno-train.de/en/recombinant-blood-group-antigens/

Producción rBGP

Generación del banco de células

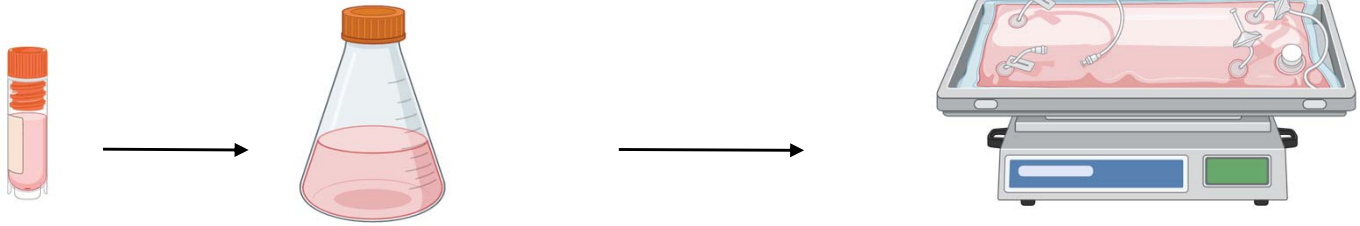


Adición DNA específico (gen clonado)

Selección de las células con el DNA insertado

Generación del banco de células productoras de la PR

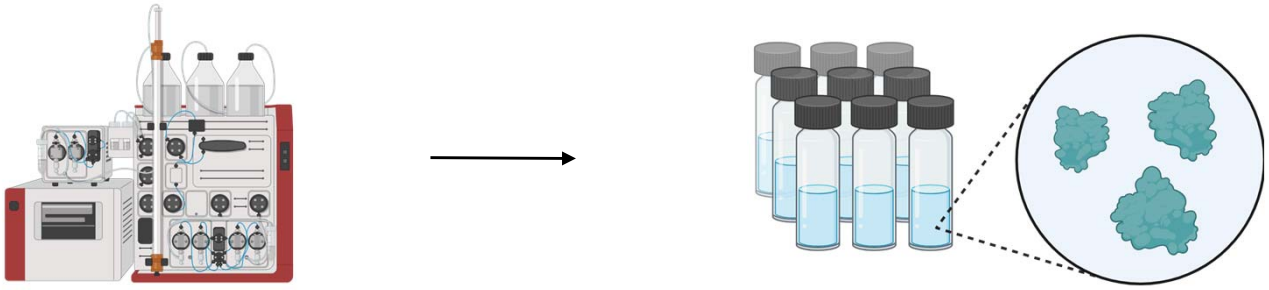
Producción rBGP específica



Descongelar el vial congelado de células y añadir el medio de cultivo

Escalar el cultivo para el volume final deseado (pej 20L). Retirar células y mantener el sobrenadante (rBGP)

Purificación y vial rBGP



Purificación del sobrenadant por cromatografia

Vial purificado de rBGP

2

rBGP comercializadas

Grupos sanguíneos neutralizados con rBGP

Blood group system	Symbol	ISBT number	Antigen	Prevalence	Comment	
					Reference	Commercial availability[a]
MNS	MNS	002	M	Intermediate	44	No
			Vw	Low	44	No
			Hut	Low	44	No
Lutheran	LU	005	Lu[a]	Intermediate	32,46–48	Yes
			Lu[b]	High	45–47,49–51	Yes
			Lu3	High	46	No
			Lu4	High	51	Yes
			Lu5	High	51	Yes
			Lu6	High	51	Yes
			Lu7	High	51	No
			Lu8	High	32	Yes
			Lu12	High	51	Yes
			Lu13	High	51	Yes
			Au[b]	Intermediate	51	No
			Lu20	High	51	Yes
			Lu28	High	52	Yes
			Lu29	High	53	Yes
Kell	KEL	006	K	Intermediate	45,46,54–56	Yes
			k	High	45,46,54,55,57,58	Yes
			Kp[a]	Low	56,57	No
			Kp[b]	High	45,46,54,57	Yes
			Ku	High	57,58	No
			Js[a]	Low	56	Yes
			Js[b]	High	45,46,54,57,58	No
			K14	High	58,59	Yes
Duffy	FY	008	Fy[a]	Intermediate	45,46,57,60–62	Yes
			Fy[b]	Intermediate	45,46,57,61,62	Yes
			Fy6	High	60	Yes
Kidd	JK	009	Jk[b]	Intermediate	63	No
Diego	DI	010	Wr[b]	High	64	No
Cartwright	YT	011	Yt[a]	High	32	Yes
			YTEG	High	65	Yes
			YTLI	High	66	Yes
			YTOT	High	66	Yes
Xg	XG	012	Xg[a]	Intermediate	67	Yes
			CD99	High	67,68	No
Scianna	SC	013	Sc1	High	29	Yes
			Sc3	High	69	Yes
			STAR	High	29	Yes
			SCAR	High	70	Yes
Dombrock	DO	014	Do[a]	Intermediate	32,71	Yes
			Do[b]	Intermediate	32,72	Yes
			Gy[a]	High	71,72	No
			Hy	High	71	Yes
			Jo[a]	High	71	Yes
Colton	CO	015	Not specified	Not specified	73	NA
Landsteiner-Wiener	LW	016	LW[a]	High	74	Yes
			LW[b]	Low	74	No
Chido/Rodgers	CH/RG	017	Not specified	High	32	Yes[b]
Kx	XK	019	Kx	High	59	NA
Gerbich	GE	020	Ge2	High	27	No
			Ge3	High	27,75	No
			Ge4	High	27	No
			Ls[a]	Low	27	No
Cromer	CROM	021	Cr[a]	High	32,76,77	Yes
			Tc[a]	High	76,77	Yes
			Dr[a]	High	76	Yes
			IFC	High	76	Yes
			WES[b]	High	32	Yes
			UMC	High	76	Yes
			CORS	High	78	Yes
Knops	KN	022	Kn[a]	High	26,57,79,80	Yes
			McC[a]	High	5,57,80	Yes
			Sl[a]	High	26,80	Yes
			Yk[a]	High	5,57,80	Yes
			DACY	High	81	Yes
			YCAD	Intermediate	81	Yes
			Not specified	Not specified	32,57,82	NA
Indian	IN	023	In[b]	High	83	Yes
			INSL	High	84	Yes
Ok	OK	024	Not specified	Not specified	85,86	NA
John Milton Hagen	JMH	026	JMH	High	32,87,88,90,91	Yes
			JMHK	High	88	Yes
			JMHL	High	88	Yes
			JMHG	High	88	Yes
			JMHM	High	88	Yes
			JMHQ	High	89	Yes
			JMHN	High	92	Yes
			JMHA	High	93	Yes
CD59	CD59	035	CD59.1	High	94	Yes

Abbreviations: ISBT, International Society of Blood Transfusion; NA, not applicable.

[a]List of commercially available rBGPs with corresponding antigens (see Web resources).

[b]Chido/Rodgers antigens targeted: Ch1 and Rg1.

Flegel WA, Srivastava K. **When recombinant proteins can replace rare red cells in immunohematology workups.** Transfusion. 2021 Jul;61(7):2204-2212. doi: 10.1111/trf.

Grupos sanguíneos potencialmente rBGP

Blood group system	Symbol	ISBT number
Rh	RH	004
Raph	RAPH	025
Gill	GIL	029
Rh-associated glycoprotein[b]	RHAG	030
JR	JR	032
LAN	LAN	033
Vel	VEL	034
Augustine	AUG	036
KANNO	KANNO	037
CTL2	CTL2	039
PEL	PEL	040
MAM	MAM	041
ABCC1	ABCC1	043

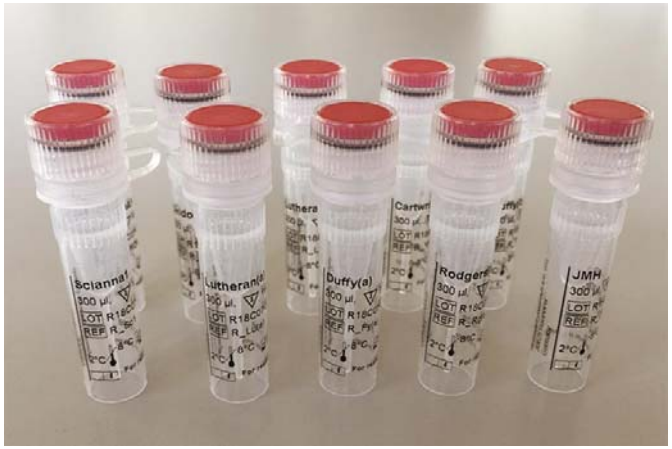
190 Ags de Alta frecuencia (IBST)

34 sistemas proteínas

No para: 8 sistemas carbohidratos + 1 GPI ancor
(si con sustancias biológicas)

Flegel WA, Srivastava K. When recombinant proteins can replace rare red cells in immunohematology workups. Transfusion. 2021 Jul;61(7):2204-2212. doi: 10.1111/trf.16507.

rBGP comercializadas



imusyn

- 19 rBGP
- RUO
- Viales 300µl
- Precio ??

DIAGNÓSTICA LONGWOOD

Distribuidora en España

inno-train DIAGNOSTIK

Distribuidora/partner alemania

https://www.inno-train.de/en/recombinant-blood-group-antigens/

Article number	rBGA	REF	Protein Specification	Quantity
004 010 001	Chido(a)	R_Ch(a)	**CH1**	1 vial à 300 µl
004 010 003	CROM/DAF	R_CROM	CROM1, CROM2, **CROM5**, CROM6, CROM7, CROM8, CROM10, CROM11, CROM12, CROM13, CROM14, CROM15, CROM16, CROM17, CROM18, CROM19, CROM20	1 vial à 300 µl
004 010 004	Dombrock(a)	R_Do(a)	**DO1**, DO3, DO4, DO5, DO6, DO7, DO8, DO9, DO10	1 vial à 300 µl
004 010 005	Dombrock(b)	R_Do(b)	**DO2**, DO3, DO4, DO5, DO6, DO7, DO8, DO9, DO10	1 vial à 300 µl
004 010 006	Duffy(a)	R_Fy(a)	**FY1**, FY6	1 vial à 300 µl
004 010 007	Duffy(b)	R_Fy(b)	**FY2**, FY6	1 vial à 300 µl
004 010 008	Kell-Kp(b)-Js(a)	R_grKba	**KEL1, KEL4**, KEL5, KEL6, KEL11, KEL12, KEL13, KEL14, KEL16, KEL18, KEL19, KEL20, KEL22, KEL25, KEL26, KEL27, KEL28, KEL29, KEL30, KEL32, KEL33, KEL34, KEL35, KEL36, KEL37, KEL38, KEL40	1 vial à 300 µl
004 010 009	Indian(b)	R_In(b)	**IN2**, IN3, IN4, IN5, IN6	1 vial à 300 µl
004 010 010	JMH	R_JMH	**JMH1**, JMH2, JMH3, JMH4, JMH5, JMH6, JMH7, JMH8	1 vial à 300 µl
004 010 011	Cellano-Kp(b)-Js(a)	R_klkba	**KEL2, KEL4**, KEL5, KEL6, KEL11, KEL12, KEL13, KEL14, KEL16, KEL18, KEL19, KEL20, KEL22, KEL25, KEL26, KEL27, KEL28, KEL29, KEL30, KEL32, KEL33, KEL34, KEL35, KEL36, KEL37, KEL38, KEL40	1 vial à 300 µl
004 010 014	Landsteiner-Wiener(a)	R_LW(a)	**LW5**, LW6, LW8	1 vial à 300 µl
004 010 015	Rodgers(a)	R_Rg(a)	**RG1**	1 vial à 300 µl
004 010 016	Scianna1	R_Sc1	**SC1**, SC3, SC5, SC6, SC7, SC8, SC9	1 vial à 300 µl
004 010 017	Xg(a)	R_Xg(a)	**XG1**	1 vial à 300 µl
004 010 018	Cartwright(a)	R_Yt(a)	**YT1**, YT3, YT4, YT5, YT6	1 vial à 300 µl
004 010 019	Kn(a)/DACY	R_CR1_2	**KN1**, KN3, KN4, KN5, KN8, KN9, **KN11**	1 vial à 300 µl
004 010 020	YCAD	R_YCAD	**KN12**	1 vial à 300 µl
004 010 021	Lutheran(a)/ Au(a)	R_Lu(a)_2	**LU1**, LU4, LU5, LU6, LU7, LU8, LU12, LU13, LU16, LU17, LU18, LU20, LU21, LU22, LU23, LU24, LU25, LU26, LU27, LU28, LU29, LU30	1 vial à 300 µl
004 010 022	Lutheran(b)/ Au(b)	R_Lu(b)_2	**LU2**, LU4, LU5, LU6, LU7, LU8, LU12, LU13, LU16, LU17, **LU19**, LU20, LU21, LU22, LU23, LU24, LU25, LU26, LU27, LU28, LU29, LU30	1 vial à 300 µl

List of rBGAs with corresponding antigens. Serologically tested antigens are in bold.

rBGP comercializadas

- Marcaje CE
- rBGP sistema Knops (KNIR)
- CD36 desarrollada, pero aún no comercializada

Knops Inhibition Reagent (KNIR)

Product code: 9497

KNIR contains a mixture of two srCR1 proteins that inhibit red cell agglutination by CR1-related antibodies in both gel and tube agglutination tests.

One vial of KNIR is sufficient for up to 12 inhibition reactions.

Product shipped at ambient temperature – transfer to -20°C on receipt and store frozen.

Product prices

All of our products are exclusive of VAT. We ship our purified recombinant blood group protein products worldwide by courier (Flight Logistics Group) and shipping fees will apply. Contact us if you require a quote, or have alternative courier arrangements.

Prices valid until March 2027.

Access the order form and order products

Quantity (vials)	KNIR GBP/vial	srCD38 GBP/vial
1+	62.00	150.00
5+	56.00	137.00
10+	50.00	126.00
25+	N/A	94.00

https://www.nhsbt.nhs.uk/ibgrl/ibgrl-research-products/recombinant-blood-group-proteins/

rBGP comercializadas

- RUO
- rBGP CD36

General Information

Gene Name Synonym:

BDPLT10; CHDS7; FAT; GP3B; GP4; GPIV; PASIV; SCARB3

Protein Construction:

A DNA sequence encoding the human CD36 (NP_001001547.1) extracellular domain (Gly 30-Asn 439) was fused with a polyhistidine tag at the C-terminus and a signal peptide at the N-terminus.

Source: Human

Expression Host: HEK293 Cells

QC Testing

Purity: ≥ 95 % as determined by SDS-PAGE. ≥ 85 % as determined by SEC-HPLC.

Endotoxin:

< 1.0 EU per μg of the protein as determined by the LAL method

Predicted N terminal: Gly30

Molecular Mass:

The secreted recombinant human CD36 comprises 421 amino acids with a predicted molecular mass of 48.1 kDa. As a result of glycosylation, the apparent molecular mass of rh CD36 is approximately 62.6 kDa in SDS-PAGE under reducing conditions.

Formulation:

Lyophilized from sterile PBS, pH 7.4

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

Usage Guide

Stability & Storage:
Samples are stable for twelve months from date of receipt at -20℃ to -80℃.

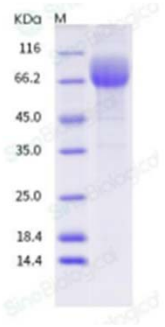
Store it under sterile conditions at -20℃ to -80℃ upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

Avoid repeated freeze-thaw cycles.

Reconstitution:

Detailed reconstitution instructions are sent along with the products.

SDS-PAGE:



Protein Description

The cluster of differentiation (CD) system is commonly used as cell markers in Immunophenotyping. Different kinds of cells in the immune system can be identified through the surface CD molecules associating with the immune function of the cell. There are more than 320 CD unique clusters and subclusters have been identified. Some of the CD molecules serve as receptors or ligands important to the cell through initiating a signal cascade which then alter the behavior of the cell. Some CD proteins do not take part in cell signal process but have other functions such as cell adhesion. Cluster of differentiation 36 (CD36), also known as FAT, SCARB3, GP88, glycoprotein IV (gpIV) and glycoprotein IIIb (gpIIIb), is a member of the CD system as well as the class B scavenger receptor family of cell surface proteins. CD36 can be found on the surface of many cell types in vertebrate animals and it consists of 472 amino acids and is extensively glycosylated. It is an integral membrane protein primarily serving as receptors for thrombospondin and collagen and by the erythrocytes infected with the human malaria parasite. The role of CD36 as a cell surface receptor has been extended to that of a signal transduction molecule.

References

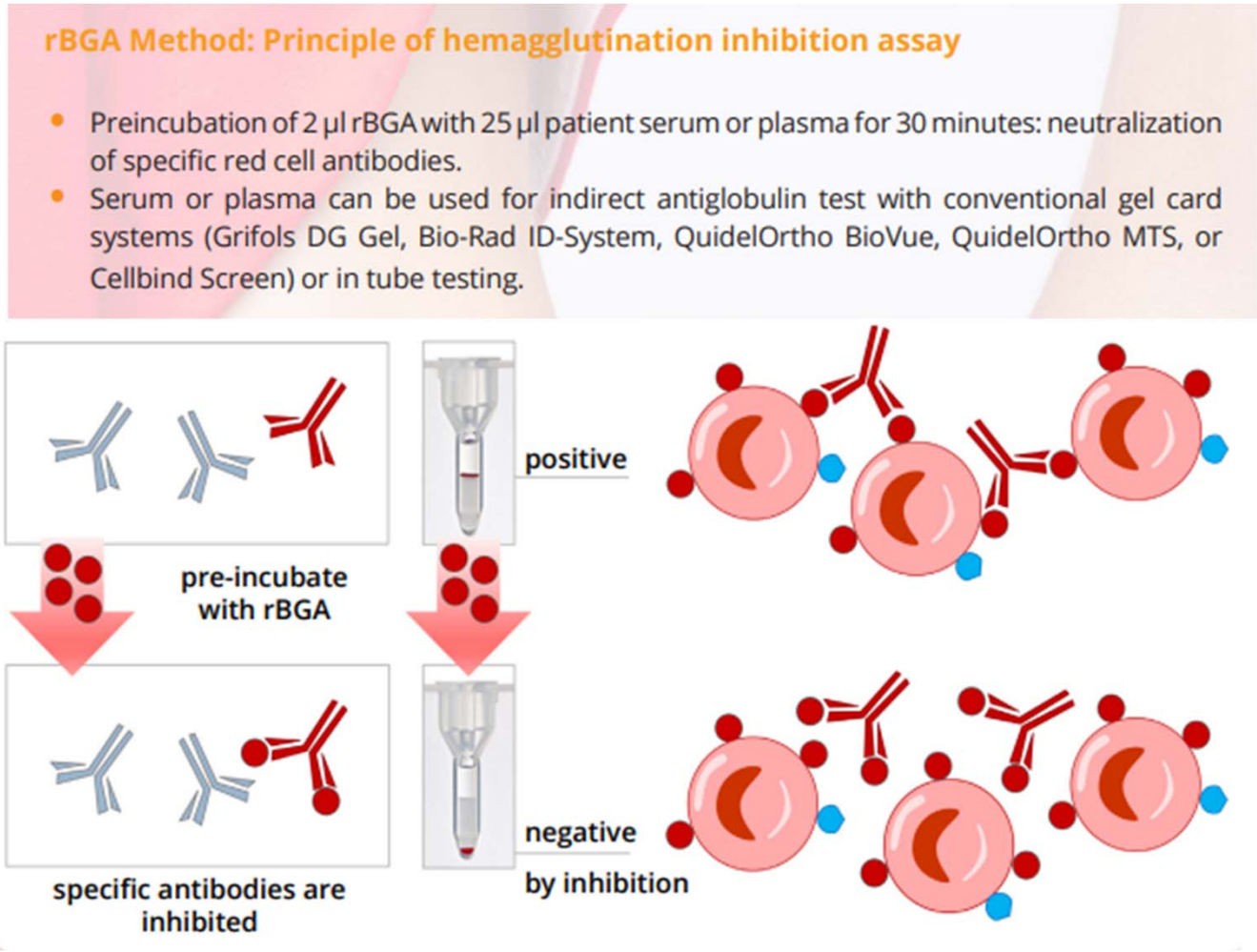
1.Zola H, *et al.* (2007) CD molecules 2006-human cell differentiation molecules. J Immunol Methods. 318 (1-2): 1-5. 2.Ho IC, *et al.* (2009) GATA3 and the T-cell lineage: essential functions before and after T-helper-2-cell differentiation. Nat Rev Immunol. 9 (2): 125-35. 3.Matesanz-Isabel J, *et al.* (2011) New B-cell CD molecules. Immunology Letters.134 (2): 104-12.

https://www.sinobiological.com/recombinant-proteins/human-cd36-10752-h08h

3

Modo de uso

Modo de uso



https://www.inno-train.de/wp-content/uploads/2026/03/Flyer_imusyn-rBGA_QMS0126_web_en.pdf

Cantidad de rBGP

imusyn

#1 2µl rBGP vs 25µl Plasma a estudio
(4µl rBGP vs 50µl Plasma a estudio)

#2 5µl rBGP vs 25µl Plasma a estudio
(10µl rBGP vs 50µl Plasma a estudio)

IBGRL RESEARCH PRODUCTS

6µl rBGP vs 50µl Plasma a estudio

SB Sino Biological

2µl rBGP vs 25µl Plasma a estudio
(4µl rBGP vs 50µl Plasma a estudio)

Técnicas compatibles

RUO

Targetas de gel:
- Grifols DGⓇGel Coombs
- Bio-Rad ID-Card LISS/Coombs

CE

Técnicas en tubo

Targetas de gel:
- Grifols DG R Gel Coombs
- Bio-Rad ID-Card LISS/Coombs
- Ortho?

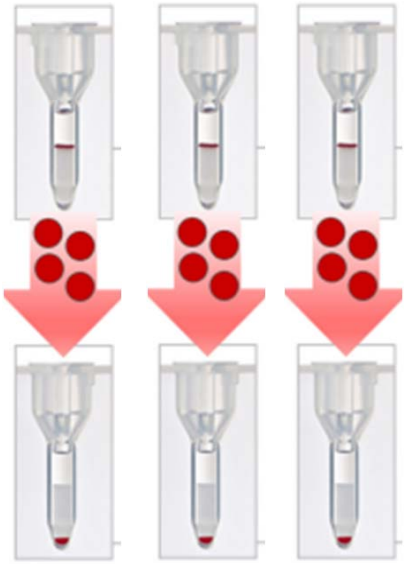
RUO

Citometria de flujo

Método de abordaje

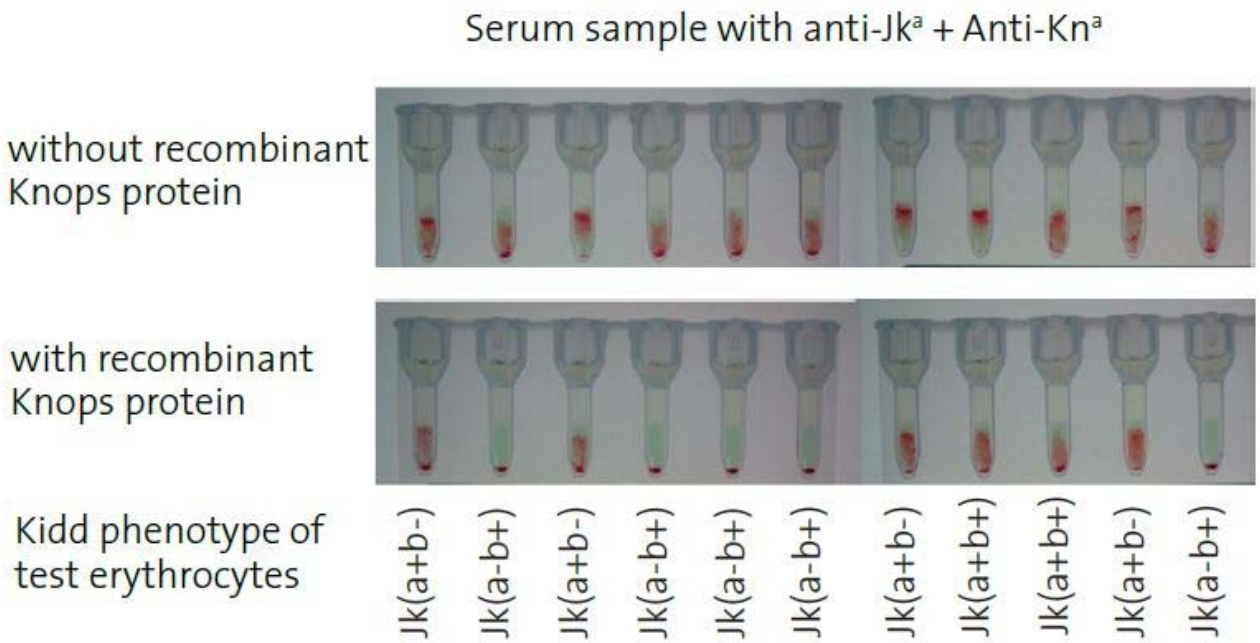
Prueba cruzada
con una célula isogrupo e isofenotipo

Escrutinio



Panel de identificación

Validación: estudio multicéntrico internacional



German Red Cross x3 centros)

Irlanda (National Blood Center)

UK (IBGRL, NHSBT)

9 rBGP
62 muestras Ac Alta Frec
14 con Ac adicionales

Seltsam A, Wagner F, Lambert M, Bullock T, Thornton N, Scharberg EA, Grueger D, Schneeweiss C, Blasczyk R. **Recombinant blood group proteins facilitate the detection of alloantibodies to high-prevalence antigens and reveal underlying antibodies: results of an international study.** Transfusion. 2014 Jul;54(7):1823-30. doi: 10.1111/trf.12553.

4

Ventajas y Limitaciones

Ventajas

Sencillo y rápido

Incoloro

Requiere poca muestra a estudio

Identificación de anticuerpos:
herramienta adicional y/o alternativa

Descartar aloanticuerpos adicionales

Mezclas de anticuerpos,

pueden mezclarse rBGPs

Detección de nuevos anticuerpos

Limitaciones

Especificidad rBGP:
puede neutralitzar más de un Ac

Ac con alto

Neutralización otras

especificidades (colateral)

Disponibilidad

Precio

Caducidad 6-12 meses 4-6ºC,

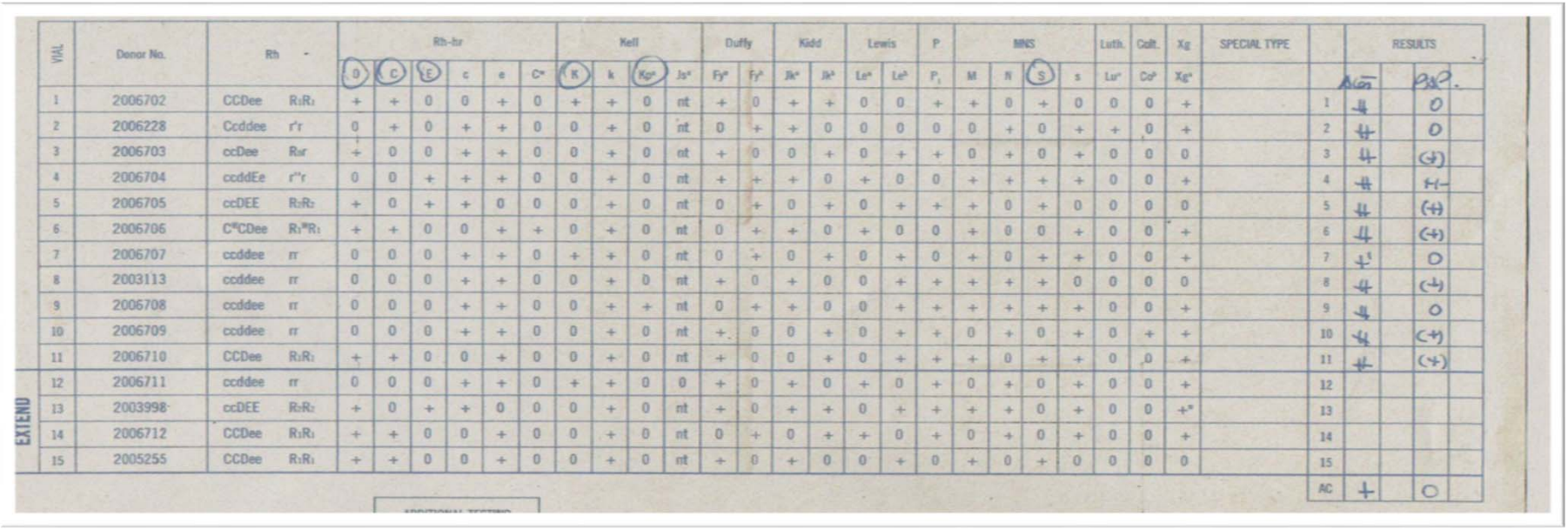
posibilidad conservación -20/-80ºC

5

Ejemplos

caso 1

rBGP para 1 solo anticuerpo



VIAL	Donor No.	Rh		Rh-hr						Kell				Duffy		Kidd		Lewis		P	MNS				Luth.	Colt.	Xg	SPECIAL TYPE		RESULTS	
				D	C	E	c	e	C^w	K	k	Kp^a	Js^a	Fy^a	Fy^b	Jk^a	Jk^b	Le^a	Le^b	P1	M	N	S	s	Lu^a	Co^b	Xg^a				
1	2006702	CCDee	R_1R_1	+	+	0	0	+	0	+	+	0	nt	+	0	+	+	0	0	+	+	0	+	0	0	0	+		1	4		0
2	2006228	Ccddee	r'r	0	+	0	+	+	0	0	+	0	nt	0	+	+	0	0	0	0	0	+	0	+	+	0	+		2	4		0
3	2006703	ccDee	R_2r	+	0	0	+	+	0	0	+	0	nt	+	0	0	+	0	+	+	0	+	0	+	0	0	0		3	4		(+)
4	2006704	ccddEe	r''r	0	0	+	+	+	0	0	+	0	nt	+	+	+	0	+	0	0	+	+	+	+	0	0	+		4	4		+/-
5	2006705	ccDEE	R_2R_2	+	0	+	+	0	0	0	+	0	nt	0	+	0	+	0	+	+	+	0	+	0	0	0	0		5	4		(+)
6	2006706	C^wCDee	$R_1^wR_1$	+	+	0	0	+	+	0	+	0	nt	0	+	+	0	+	0	0	+	0	0	+	0	0	+		6	4		(+)
7	2006707	ccddee	rr	0	0	0	+	+	0	+	+	0	nt	0	+	0	+	0	+	0	+	0	+	+	0	0	+		7	+^1		0
8	2003113	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	+	0	+	0	0	+	+	+	+	+	0	0	0	0		8	4		(+)
9	2006708	ccddee	rr	0	0	0	+	+	0	0	+	+	nt	0	+	+	0	0	+	+	+	+	+	+	0	0	+		9	4		0
10	2006709	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	+	0	0	+	0	+	+	0	+	0	+	0	+	+		10	4		(+)
11	2006710	CCDee	R_1R_1	+	+	0	0	+	0	0	+	0	nt	+	0	0	+	0	+	+	+	0	+	+	0	0	+		11	4		(+)
12	2006711	ccddee	rr	0	0	0	+	+	0	+	+	0	0	+	0	+	0	+	0	+	0	+	0	+	0	0	+		12			
13	2003998	ccDEE	R_2R_2	+	0	+	+	0	0	0	+	0	nt	+	0	+	+	0	+	+	+	+	0	+	0	0	+^w		13			
14	2006712	CCDee	R_1R_1	+	+	0	0	+	0	0	+	0	nt	0	+	0	+	+	0	+	0	+	0	+	0	0	+		14			
15	2005255	CCDee	R_1R_1	+	+	0	0	+	0	0	+	0	nt	+	0	+	0	0	+	0	+	0	+	0	0	0	0		15			
																												AC	+		0

EXTEND

Diez días después de la transfusión:

- Panaglutinación homogénea
- Autocontrol positivo débil
- Coombs directo positivo débil (IgG)
- Se cruzan múltiples CH, y sólo uno resulta compatible

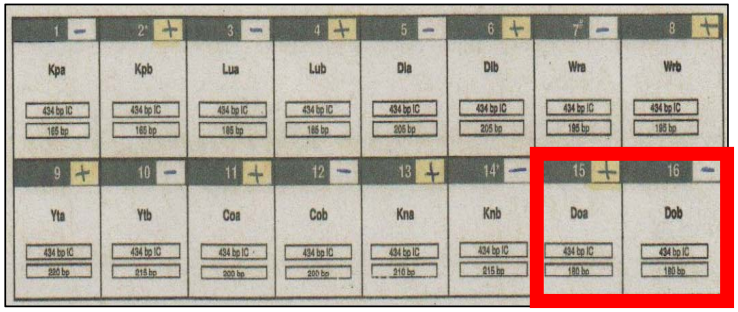
caso 1

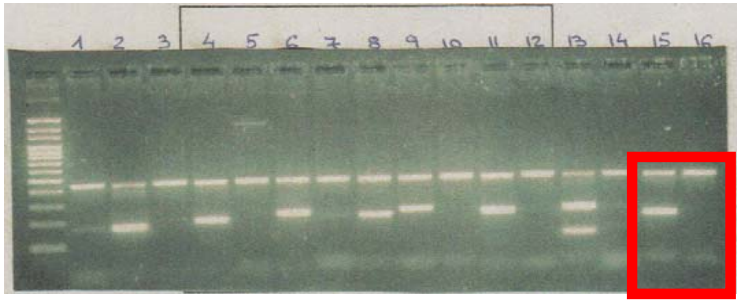
Grupo y genotipo eritrocitário

- Grupo A RhD negativo.
- Fenotipo inferido del genotipo: (*BLOODchip ID CORE XT*):

rr, kk, Kp(a-b+), Fy(a+b+), Jk(a+b+) MNss

- Se tipan los Ags de otros sistemas que incluyen Ags de alta frecuencia: Di(a-b+), Co(a+b-), Yt(a+b-), Lu(a-b+), Di(a-b+), Kn(a+b-), **Do(a+b-).**



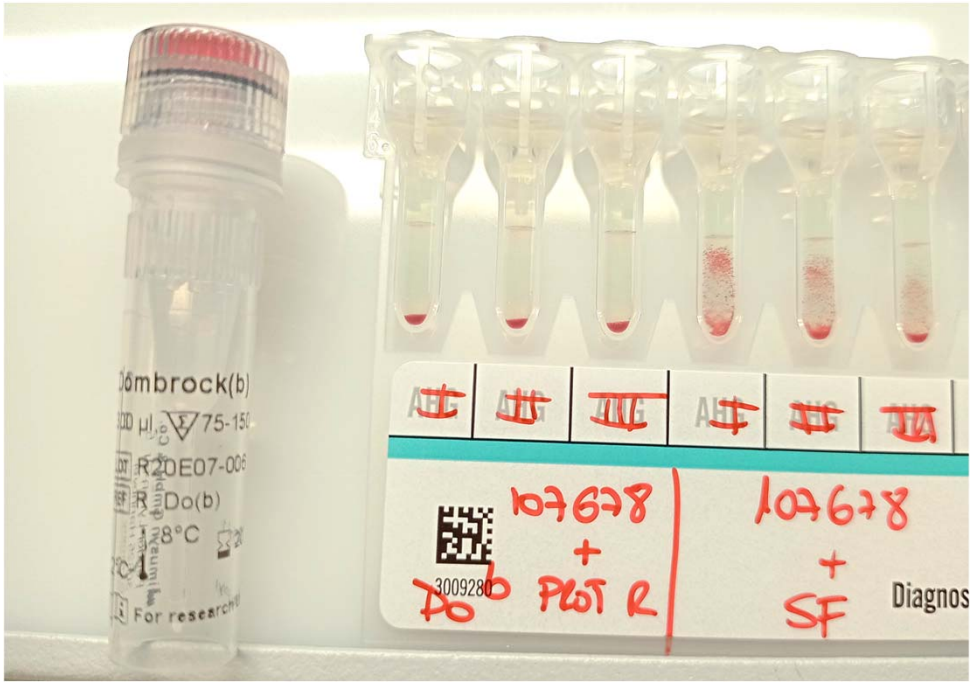


caso 1

Neutralización con rBGP

- **Adsorciones diferenciales** isofenotipo con PEG (x6) que excluyen la presencia de aloanticuerpos ocultos.
- **Pruebas cruzadas hematíes Do(b-)** són compatibles
- Título 32

- **rBGP Do^{b}** consigue neutralizar la reactividad del anticuerpo



R_Do(b)	**Do(b)**, Hy+, Jo(a+), DOLG+, DOYA+, DOMR+, DOLC+, DODE+

caso 2

rBGP con anticuerpos enmascarados

	Rh		Rh-hr						Kell				Duffy		Kidd		Lewis		P	MNS				Luth.	Colt.	Xg	SPECIAL TYPE		RESULTS	
			D	C	E	c	e	C^w	K	k	Kp^a	Js^a	Fy^a	Fy^b	Jk^a	Jk^b	Le^a	Le^b	P_1	M	N	S	s	Lu^a	Co^b	Xg^a			AST	PAP
1	CCDee	R_1R_1	+	+	0	0	+	0	+	+	0	nt	+	$+^w$	0	+	0	+	+	0	+	+	0	0	0	+		1	|||	|||
2	Ccddee	r'r	0	+	0	+	+	0	0	+	0	nt	+	0	+	+	0	+	$+^w$	0	+	0	+	0	0	0		2	||'		0
3	ccDee	R0r	+	0	0	+	+	0	0	+	0	nt	0	+	+	0	0	+	+	+	0	+	0	0	0	+		3		'		0
4	ccddEe	r''r	0	0	+	+	+	0	0	+	0	nt	+	+	+	0	0	+	0	+	0	0	+	0	0	+		4	||		0
5	ccDEE	R_2R_2	+	0	+	+	0	0	0	+	0	nt	+	0	0	+	0	+	+	+	+	0	+	0	+	+		5	||'		0
6	C^wCDee	$R_1^wR_1$	+	+	0	0	+	+	0	+	0	nt	0	+	+	0	+	0	+	+	0	+	+	0	0	+		6		'		0
7	ccddee	rr	0	0	0	+	+	0	+	+	0	nt	0	+	+	0	+	0	+	+	0	0	+	0	0	+		7	|||	|||
8	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	+	0	0	+	0	+	0	0	+	0	+	+	0	+		8	||'		0
9	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	0	+	0	+	+	0	+	+	0	+	0	0	0	0	+		9	|'		0
10	ccddee	rr	0	0	0	+	+	0	0	+	+	nt	+	0	+	+	0	+	0	0	+	0	+	0	0	0	+		10	||'		0
11	CCDee	R_1R_1	+	+	0	0	+	0	0	+	0	0	+	0	+	0	0	0	+	+	+	+	0	0	0	+		11	||'		0

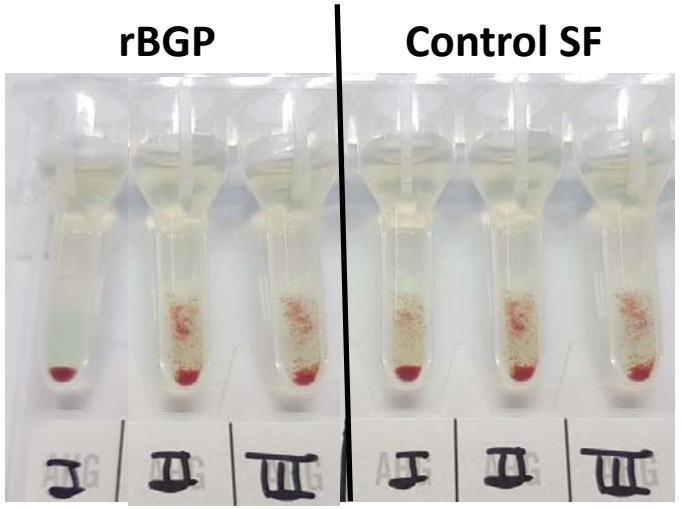
Autocontrol 0 0

Se detecta anti-Kell en fase enzimática + panaglutinación con diferentes positividades en fase de AGT

Caso 2

Neutralización con distintas rBGP

	HEMATÍES I	HEMATÍES II	HEMATÍES III
Plasma control	2+	4+	4+
CR1	**0**	**2+**	**4+**
JMH	2+	4+	4+
Yta	2+	4+	4+
YCAD	2+	4+	4+



R_CR1_2	**Kn(a)**, McC(a), Sl(a), Sl3+, KCAM+, Yk(a), **DACY**

Caso 2

Panel de identificación con rBGP CR1

	Rh		Rh-hr						Kell				Duffy		Kidd		Lewis		P	MNS				Luth.	Colt.	Xg	SPECIAL TYPE	RESULTS	
			D	C	E	c	e	C^w	K	k	Kp^a	Js^a	Fy^a	Fy^b	Jk^a	Jk^b	Le^a	Le^b	P_1	M	N	S	s	Lu^a	Co^b	Xg^a		Control	CR1
1	CCDee	R_1R_1	+	+	0	0	+	0	+	+	0	nt	+	$+^w$	0	+	0	+	+	0	+	+	0	0	0	+		1	
2	Ccddee	r'r	0	+	0	+	+	0	0	+	0	nt	+	0	+	+	0	+	$+^w$	0	+	0	+	0	0	0		2	
3	ccDee	R_0r	+	0	0	+	+	0	0	+	0	nt	0	+	+	0	0	+	+	+	0	+	0	0	0	+		3	
4	ccddEe	r''r	0	0	+	+	+	0	0	+	0	nt	+	+	+	0	0	+	0	+	0	0	+	0	0	+		4	
5	ccDEE	R_2R_2	+	0	+	+	0	0	0	+	0	nt	+	0	0	+	0	+	+	+	+	0	+	0	+	+		5	
6	C^wCDee	$R_1^wR_1$	+	+	0	0	+	+	0	+	0	nt	0	+	+	0	+	0	+	+	0	+	+	0	0	+		6	
7	ccddee	rr	0	0	0	+	+	0	+	+	0	nt	0	+	+	0	+	0	+	+	0	0	+	0	0	+		7	
8	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	+	0	0	+	0	+	0	0	+	0	+	+	0	+		8	
9	ccddee	rr	0	0	0	+	+	0	0	+	0	nt	0	+	0	+	+	0	+	+	0	+	0	0	0	+		9	
10	ccddee	rr	0	0	0	+	+	0	0	+	+	nt	+	0	+	+	0	+	0	0	+	0	+	0	0	+		10	
11	CCDee	R_1R_1	+	+	0	0	+	0	0	+	0	0	+	0	+	0	0	0	+	+	+	+	0	0	0	+		11	

Se detecta:

anti-Kell + anti-Fy^a + Ac dirigido contra el sistema Knops

Caso 3

rBGP que no neutraliza

- Grupo O RhD positivo
- CD negativo
- IAI LC: panaglutinina homogénea (2+) con autocontrol positivo (1+)
- Sensible papaína
- No adsorbible (PEG x6)
- IgG4 → EAI negativo con AGH no anti- IgG4
- Fenotipo JMH negativo (x2 antisueros)
- PC con 4 células JMH:-1 són compatibles
- Título: 512

Anti-JMH

Caso 3

Neutralización a distintas dosis

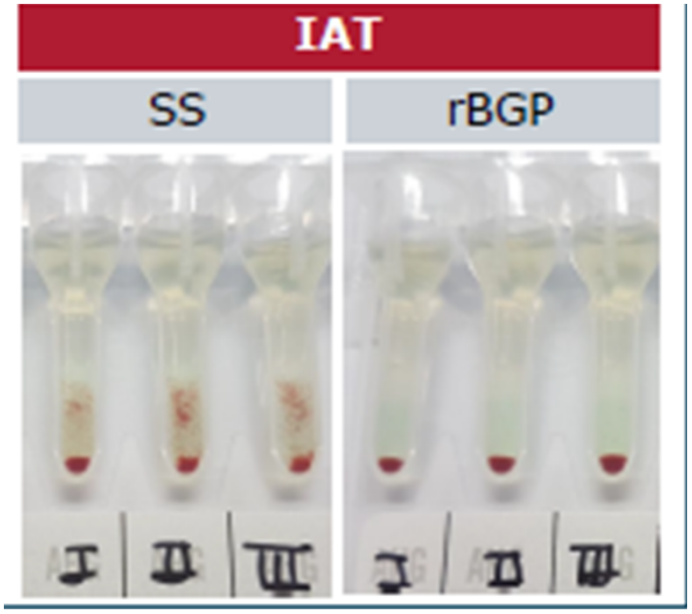
Ensayo de neutralización con 2 µl de rBGP JMH por 25 µl plasma no inhibe la reactividad

Desde Longwood nos recomiendan diluir la muestra hasta aconseguir un titulo de 10 o incluso de 1

Table 1. IAT, rBGP inhibition assay and DTT results summary table

Test results	Original Plasma (Not diluted)								Plasma dilution 1/10			
Ab Titre	512								8			
Technique	IAT		rBGP inhibition				DTT		rBGP inhibition		DTT	
	LC	PP	rBGP **2µl**	Control (SS)	rBGP **5µl**	Control (SS)	DTT RBC	No DTT RBC	rBGP **2µl**	Control (SS)	DTT RBC	No DTT RBC
C1	++	0	++	++	++	++	++	++	0	++	0	++
C2	++	0	++	++	++	++	++	++	0	++	0	++
C3	++	0	++	++	++	++	++	++	0	++	0	++
Autocontrol	+	nt										
DAT	Negative											

Abbreviations: **Ab;** Antibody, **LC;** Liss-Coombs gel cards using 50µl RBC/50µl plasma (Grifols DG® Gel Coombs), **PP;** neutral gel card with papain-tretated RBC using 50µl RBC/50µl plasma (Grifols DG® Gel neutral), **IAT;**indirect antiglobulina test , **rBGP;** inhibition assay with JMH rBGP, **2µl or 5µl** ; amount of JMH used being 2µl or 5µl rBGP / 25µl plasma, **SS;** saline solution 0,9%, **C1-C2-C3;** 3 reagent RBC panel, **DTT;**1,4-Dithiothreitol (DTT) 0.2M treatment of reagent RBCs,**nt;** not tested, **DAT;** direct antiglobulina test



Caso 3

rBGP para anticuerpo/s de alto título

- Algunas de las rBGP no consiguen neutralizar Ac con alto título a dosis estándar.

  Literatura: especificidades HTLA como JMH y Knops
- Valorar titular los anticuerpos antes de realizar neutralizaciones con rBGP
- rBGP son una herramienta más, los estudios deben analizarse de manera global
- La dilución de la muestra puede conseguir la inhibición de la reactividad, pero puede eliminar aloanticuerpos enmascarados de menor título.

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Moltes gràcies

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