

Red Cell Immunohaematology

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Caring Expert Quality

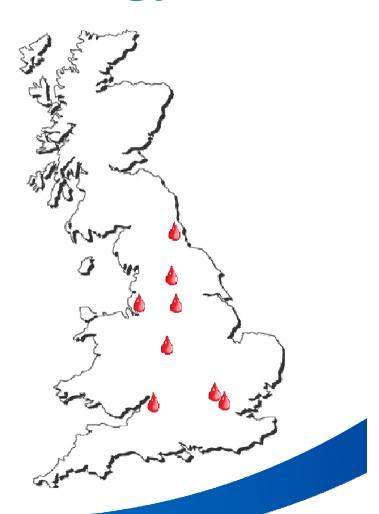


The RCI Laboratories



Red Cell Immunohaematology

- Reference laboratories supporting hospital blood banks in England.
- RCI laboratories at NHSBT centers in
 - Newcastle
 - Leeds
 - Sheffield
 - Liverpool
 - Birmingham
 - Bristol (Filton)
 - London (Colindale and Tooting)





RCI Services

- Blood Grouping Anomalies
- Antibody Investigations
 - Complex antibody investigations
 - Crossmatching
- Antenatal Reference Services
 - Titrations / Quantitations (anti-D, anti-c)
- Fetal-Maternal Haemorrhage
- Transfusion Reaction Investigations

Request for Ref	erence Serology	1 A NHS Blood and Transplant
Ple	ase see reverse for samp	ples required
Place correctly labelled our	rples in beg, remove protective	strip, field unto beg and seed firmly
on for	nts of matching ident rms <u>and</u> sample tuber not use this form for routine a	
Please write clearly inside to	of boxes, one character per box at TEAR HERE	nd mark option boxes as appropriate
	TEAK PERE	
Please complete all s	sections fully. Urgent req	uests MUST be telephoned.
PATIENT DETAILS NHSST Na.	MASN	
Satiene		
First rame		
008	Gender (MF)	Ethnic origin code (sec reverse)
First line of address		
Post code	EDD	
Hospital number	- House	atal sample Concriber
HOSPITAL & REQUESTER I	DETAILS	
Full Hospital name		
Hospital parti soles	Consultant	
Contact name		
Pfone		Bleep



Antibody Investigations



Panels and Cells

- Panel cells from NHSBT reagents
 - Panel 1 and 2
 - Reference Panel 1 (R1R1, for anti-c)
 - Reference Panel 2 (R2R2, for anti-e)
- Rare cells from selected donors
 - From Testing / Rare Cell Exchange Scheme
 - Frozen Cell Bank
 - High frequency negatives, eg. K+k-, U-, Vel-
 - Low frequency positives, eg. Wr(a+), Js(a+), Di(a+)



Serological Techniques

- A variety of techniques can be employed
 - BioRad gel IAT
 - BioRad enzyme IAT
 - LISS Tube IAT
 - Saline (direct agglutination)
 - Capture-R (*Immucor*)
 - BioVue IAT (Ortho)
- Vary temperature, incubation times, etc



Adsorptions & Elutions

- DAT performed if auto control positive
 - Monospecific anti-IgG, -IgM, -IgA, -C3d, -C3c
- Autoantibodies can be removed by
 - Autoadsorptions: ZZAP-treated own cells
 - Alloadsorptions: paired reagent cells
- Elutions may be used to ascertain specificity of antibody coating red cells
 - Transfusion Reactions
 - Haemolytic Disease of the Fetus & Newborn



Antibody Neutralisation

- "Nuisance" antibodies can be inhibited or neutralised to reveal any underlying alloantibodies
- Chido-Rogers antibodies
 - Target C4 complement proteins
 - Neutralised by the addition of excess complement (AB serum)
- Knops-McCoy antibodies
 - Target CR1 molecule on red cells
 - Neutralised by the addition of recombinant KNIR reagent



Phenotyping & Genotyping

- Allo or autoantibody?
- Phenotyping
 - Serological testing using antisera
 - Phenotyping cannot be performed if the patient has had a recent transfusion.
- Genotyping
 - DNA Sequencing
 - Consider in: transfusion-dependent patients (eg. sickle cell), patients with multiple antibodies, before starting treatments, eg. Daratumumab



Tertiary Referral

- The International Blood Group Reference Laboratory (IBGRL) is located at NHSBT Filton
 - Samples may be referred to IBGRL from RCI if antibody specificity cannot be ascertained
 - IBGRL receive samples from all over the World.
- The National Frozen Blood Bank is located at NHSBT Liverpool
 - Rare donors are identified by Testing and red cell units frozen
 - Rare, frozen blood can be requested when required
 - eg. Bombay phenotype (with anti-H)





The Rules of the Game I

- BSH Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories (2002).
- Always do your best to exclude all clinically significant antibodies.
 - Excluding anti-Cw, -P1, -Kpa, -Lua, -Lea, Leb not strictly necessary if you don't have appropriate cells
- Don't forget your screening results!!!



The Rules of the Game II

- Antibody exclusions:
 - "...the presence of anti-Jka, anti-Jkb, anti-S, anti-s, anti-Fya and anti-Fyb should be excluded using red cells having homozygous expression of the relevant antigen..."
 - "...A single example only of each phenotype is sufficient for exclusion..."



The Rules of the Game III

- Antibody identification:
 - "...specificity should only be assigned when the plasma is reactive with at least two examples of reagent red cells expressing the antigen and non- reactive with at least two examples of reagent red cells lacking the antigen..."



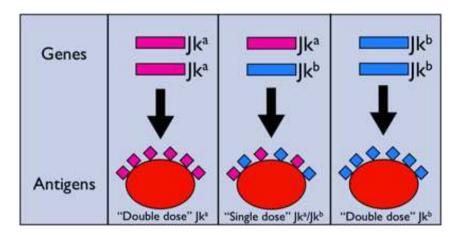
The Enzyme Panel

- Papain most commonly used (from Papaya)
- Papain enhances the reaction strength of
 - Rh system antibodies (anti-D, -C, -c, E, -e, -Cw)
 - Kidd system antibodies (anti-Jka, -Jkb)
- Papain destroys some red cell antigens; so negative reactions will be observed with
 - MNS system antibodies (anti-M, -N, -S, -s)
 - Duffy system antibodies (anti-Fya, -Fyb)



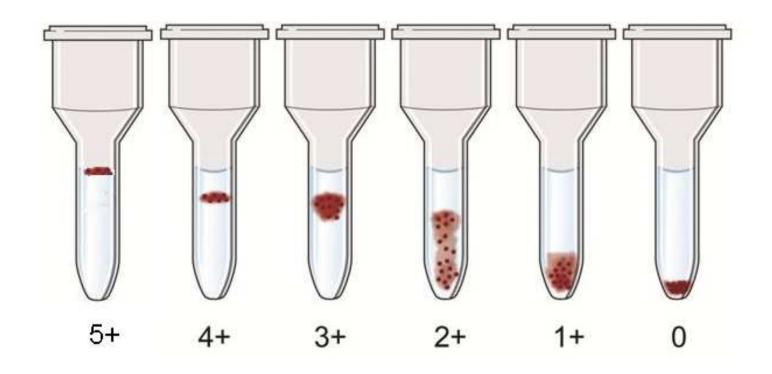
The Dosage Effect

- "Dosage" refers to the effect of seeing stronger reactions with homozygous antigen expression compared to heterozygous expression.
 - Eg. anti-Jka may react stronger with Jk(a+b-) cells than Jk(a+b+) cells





Gel IAT Grading





Cell	Rh	M	N	S	S	P1	Lua	K	k	Kpa	Lea	Leb	Fya	Fy ^b	Jka	Jk ^b	
1	$R_1^wR_1$	0	+	0	+	5	0	+	+	0	0	+	0	+	0	+	0
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	4
3	R_2R_2	0	+	0	+	3	0	0	+	0	+	0	0	+	+	0	0
4	r'r	+	0	+	0	3	0	0	+	0	0	+	0	+	+	0	0
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	4
6	rr	+	0	0	+	0	0	+	0	0	0	+	0	+	+	0	0
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	4
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	4
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	4
10	rr	+	0	+	0	3	+	0	+	0	+	0	0	+	0	+	0



Cell	Rh	M	N	S	S	P1	Lua	K	k	Kpa	Lea	Leb	Fya	Fy ^b	Jka	Jk ^b	
1	$R_1^wR_1$	0	+	0	+	5	0	+	+	0	0	+	0	+	0	+	0
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	4
3	R_2R_2	0	+	0	+	3	0	0	+	0	+	0	0	+	+	0	0
4	r'r	+	0	+	0	3	0	0	+	0	0	+	0	+	+	0	0
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	4
6	rr	+	0	0	+	0	0	+	0	0	0	+	0	+	+	0	0
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	4
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	4
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	4
10	rr	+	0	+	0	3	+	0	+	0	+	0	0	+	0	+	0



Cell	Rh	M	N	S	S	P1	Lua	K	k	Kpa	Lea	Le ^b	Fya	Fy ^b	Jka	Jk ^b	
1	R_1WR_1	0		0		5	0	+	+	0	0		0		0		0
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	4
3	P_2R_2	0	+	0	+	3	0	0		0	1	0	0	+	1	0	0
4	r'r	1	0	1	0	3	0	0	+	0	0	+	0	+	+	0	0
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	4
6	rr	+	0	0	+	0	0	1	0	0	0	+	0	+	+	0	0
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	4
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	4
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	4
10	rr	+	0	+	0	3		0	+	0	+	0	0	+	0	+	0



Your Turn!



Panel Sheet Exercise

- "IAT" = BioRad Gel IAT results
- "ENZ" = BioRad Enzyme results (papainised cells)
- Effect of Papain (enzyme panel)
 - Enhances reactions with anti-D, -C, -c, -E, -e, -Cw, -Jka, -Jkb
 - Destroys M, N, S, s, Fya, Fyb antigens



	Rh	С	D	E	С	е	Cw	M	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	IN.	Cash		
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0		
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0		
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	5		
4	r³r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0		
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		4	5		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0		
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0		
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0		
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0		
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0		
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R	eagent			T											DAT	Profile	e A	nti-IgG	;	IgA		IgM	C3c		C	3d	Ctrl
L	ot No.										T				R	esult											



	Rh	С	D	Е	С	е	Cw	M	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	, PAT	Cash		
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0		
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0		
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	5		
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0		
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		4	5		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0		
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0		
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	4-	0	+	0	+	0		0	0		
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0		
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0		
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R	Reagent			1											DAT	Profile	Ar	nti-IgG		IgA		IgM	C3c		C3	Bd	Ctrl
L	ot No.														R	esult											



	Rh	С	D	E	С	е	Cw	M	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Le ^b	Fy ^a	Fy ^b	Jk ^a	Jkb	Other	IAT	EN2			
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0			
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	0			
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0			
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0			
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0	1		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		3	0			
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0			
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0			
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0			
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0			
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	+	0	-		0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0			
r"r	-	U	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0			
	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0	1		
rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		3	0			
rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0			
rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0			
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Anti-Fya
Can't exclude anti-Kpa



	Rh	С	D	E	С	е	Cw	M	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jkb	Other	IAT	652	PATELLON	
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0	1	
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0	0	
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		0	0	0	
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0	0	
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0	1	
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0	0	
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0	0	
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0	1	
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0	0	
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0	1	
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R	Reagent			T											DAT	Profile	A	nti-IgG		IgA	1	IgM	C3c		C3d		Ctrl
L	ot No.														R	esult		3mf		0		0	0		0		0



	tions for use Rh	С	D	E	С	е	Cw	М	N	S	s	P1	Lu ^a	K	k	Kp ^a	Lea	Le ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	iar	652	ELLO	-
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0	1	
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0	0	
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		0	0	0	
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0	0	
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0	t	
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0	0	
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0	0	
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0	1	
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0	0	
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0	1	
																					processors		Auto	3	/	/	
		-													-									-			
R	eagent			1			1								DAT	Profile	A	nti-IgG		IgA		IgM	C3c	1	C30	d	Ctrl
L	ot No.														R	esult		3mf		0		0	0		0		0

Anti-Jka
Can't exclude anti-Cw



	Rh	С	D	E	С	е	Cw	M	N	s	s	P1	Lu ^a	K	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	IAT	ENZ		
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		3	5		
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+	=	3	5		
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0		
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	3	5		
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0		
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0		
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0		
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		3	0	ile.	
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0		
																							AUTO	0	1		
																									V-		
R	eagent			T											DAT	Profile	Ar	nti-IgG		IgA		IgM	C30		C3	d	Ctrl
L	ot No.														R	esult											



Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	С	D	Е	С	е	Cw	M	N	s	s	P1	Lu ^a	К	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jkb	Other	IAT	ENZ			
1	R ₁ ^W R ₁	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		3	5			
2	R ₁ R ₁	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	5			
3	R ₂ R ₂	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0			
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	3	5			
5	r"r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0			
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0			
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0			
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0			
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		3	0			
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0	Will con	0	0			Ĭ.
																							AUTO	0	1			
													-	-										-				
R	Reagent	-		1							-				DAT	Profile	. A	nti-IgG	3	IgA		IgM	C3	c	C30	d	Ctrl	_
	_ot No.							-							R	esult												

Anti-C, Anti-s
Can't exclude anti-Cw, Lua, Kpa



	Rh	С	D	Е	С	е	Cw	М	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Leb	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	PA	
1	R1wR1	+	+	0	0	+	+	0	+	0	+	0	0	0	+	0	+	0	0	+	0	+	Bgb+	0	
2	R1wR1	+	+	0	0	+	+	+	0	+	0	0	0	0	+	0	0	+	+	0	+	0	Cob+	3	
3	R1Rz	+	+	+	0	+	0	+	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0	
4	R1Rz	+	+	+	0	+	0	0	+	0	+	4	0	0	+	0	0	+	+	0	+	0		0	
5	Ror	0	+	0	+	+	0	+	0	0	+	4	0	0	+	0	0	+	0	0	+	0	Dob- Goa+	5	
6	R1R1	+	+	0	0	+	0	0	+	+	0	1	0	+	0	0	0	0	w	0	0	+		0	
7	R1R1	+	+	0	0	+	0	+	0	0	+	0	0	+	+	0	0	+	0	+	+	0		3	
8	R1R1	+	+	0	0	+	0	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		0	
9	R1R1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	+	0	0	+	0	+		3	
10	R1R1	+	+	0	0	+	0	+	+	0	+	3	+	0	+	0	0	+	+	0	0	+	Cob+	0	
																							AUTO	0	
R	Reagent			T						Т					AT Pr	ofile	Ant	ti-lgG		lgA		IgM	C3c	C3d	Ctrl
ı	Lot No.														Resu	lt									



	Rh	С	D	Е	С	е	Cw	М	N	S	s	P1	Lua	K	k	Kp ^a	Lea	Le ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Other	PA	
1	R1wR1	+	+	0	0	+	+	0	+	0	+	0	0	0	+	0	+	0	0	+	0	+	Bgb+	0	
2	R1wR1	+	+	0	0	+	+	+	0	+	0	0	0	0	+	0	0	+	+	0	+	0	Cob+	3	
3	R1Rz	+	+	+	0	+	0	+	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0	
4	R1Rz	+	+	+	0	+	0	0	+	0	+	4	0	0	+	0	0	+	+	0	+	0		0	
5	Ror	0	+	0	+	+	0	+	0	0	+	4	0	0	+	0	0	+	0	0	+	0	Dob- Goa+	5	
6	R1R1	+	+	0	0	+	0	0	+	+	0	1	0	+	0	0	0	0	w	0	0	+		0	
7	R1R1	+	+	0	0	+	0	+	0	0	+	0	0	+	+	0	0	+	0	+	+	0		3	
8	R1R1	+	+	0	0	+	0	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		0	
9	R1R1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	+	0	0	+	0	+		3	
10	R1R1	+	+	0	0	+	0	+	+	0	+	3	+	0	+	0	0	+	+	0	0	+	Cob+	0	
																							AUTO	0	
R	Reagent			T		T				T					AT Pro	ofile	Ant	ti-lgG		IgA		IgM	C3c	C3d	Ctrl
ı	Lot No.													1	Resu	It									

Anti-M, Anti-c

Need second cell to confirm anti-c. Anti-M showing dosage



	tions for use Rh	С	D	E	c	е	C.	M	N	S	s	P1	Lu²	K	k	Kp³	Le	Leb	Fy*	Fyb	Jka	Jkb	Other	SK.	02	
1	R ₁ WR ₁	+	+	0	0	+	+	+	0	+	0	0	0	+	+	0	+	0	0	+	0	+		5	1	+
2	R ₁ R ₁	+	+	0	0	+	0	0	+	0	+	0	0	0	+	0	0	+	+	0	+	0	F	2	5	+
3	R ₂ R ₂	0	+	+	+	0	0	+	0	+	0	2	0	0	+	0	+	0	+	0	0	+	HLA+	3	5	+
4	r'r	+	0	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	+	0		3	5	+
5	r"r	0	0	+	+	+	0	0	+	0	+	4	+	0	+	0	0	+	0	+	+	0		3	5	+
6	rr	0	0	0	+	+	0	+	0	+	0	1	0	+	0	0	0	+	+	0	+	0		3	5	
7	rr	0	0	0	+	+	0	0	+	0	+	3	0	+	+	0	+	0	0	+	+	0	Cob+	3	5	
8	rr	0	0	0	+	+	0	0	+	0	+	0	0	0	+	+	0	+	+	0	+	0		3	5	+
9	rr	0	0	0	+	+	0	+	0	0	+	2	+	0	+	0	0	+	0	+	0	+		3	5	\vdash
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	+	0	+	0	0	+	Cob+	3	5	\top
_		Щ																					Auto	3		
-														-	-	-	- 1	_								-
Re	eagent			T					Γ,						DAT	Profile	An	ti-lgG		IgA	\top	IgM	C3c	4	C3d	Ctrl
L	ot No.														-	sult		3		0		O	0		000	0



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