Er Blood Group Collection

Number of antigens 3

High prevalence	Er^a, Er3
Low prevalence	Er^b

Terminology

ISBT symbol (number)	ER (208)
History	Became a blood group collection in 1990.

Phenotypes

Null	Er(a–b–)

Er^a Antigen

Terminology

ISBT symbol (number)	ER1 (208001 or 208.1)
Obsolete names	Rosebush; Ros; Min; Rod
History	Reported in 1982; named after the first proband to make the antibody.

Occurrence

Caucasians	1 in 100,000 With the exception of one Japanese woman (see below) all Er(a–) probands have been of European ancestry

Antithetical antigen

Er^b (**ER2**)

Expression

Cord RBCs	Expressed
Altered	RBCs from a Japanese woman and two of her siblings reacted with three of eight anti-Er^a

The Blood Group Antigen (3/e). DOI: http://dx.doi.oxg/10.1016/B978-0-12-415849-8.00038-7

Effect of enzymes and chemicals on Er^a antigen on intact RBCs

Ficin/Papain	Resistant
Trypsin	Resistant
α-Chymotrypsin	Resistant
DTT 200 mM	Resistant
Acid	Sensitive

In vitro characteristics of alloanti-Er^a

Immunoglobulin class	IgG
Optimal technique	IAT

Clinical significance of alloanti-Er^a

Transfusion reaction	No to reduced RBC survival[1]
HDFN	Positive DAT but no clinical HDFN

Comments

The mode of inheritance of Er^a is unclear: one Er(a–) proband has two siblings, a mother, two aunts and an uncle, all of whom were Er(a–) suggesting the presence of a third allele.
The anti-Er^a made by the Japanese proband gave slightly weakened reactions with trypsin-treated RBCs.

Reference

[1] Thompson, H.W., et al., 1985. Survival of Er(a+) red cells in a patient with allo-anti-Er^a. Transfusion 25, 140–141.

Er^b Antigen

Terminology

ISBT symbol (number)	ER2 (208002 or 208.2)
History	Reported in 1988, when the antibody was shown to recognize the antithetical low prevalence antigen to Er^a.

Occurrence

Most populations	<0.01%

Antithetical antigen

Er^a (**ER1**)

Expression

Cord RBCs	Expressed

Effect of enzymes and chemicals on Er^b antigen on intact RBCs

Ficin/Papain	Resistant
Trypsin	Resistant
α-Chymotrypsin	Resistant
AET	Resistant

In vitro characteristics of alloanti-Er^b

Immunoglobulin class	IgG
Optimal technique	IAT

Clinical significance of alloanti-Er^b

Limited data because only two examples of anti-Er^b have been reported.

HDFN	DAT+, but no clinical HDFN[1]

Reference

[1] Poole, J., et al., 2010. The second example of anti-Er^b and its clinical significance in pregnancy [abstract]. Vox Sang 99 (Suppl. 1), 340.

Er3 Antigen

Terminology

ISBT symbol (number)	ER3 (208003 or 208.3)
History	An antibody made by a person with ER:−1,−2 RBCs with characteristics of antibodies in the ER collection was identified in 2000 and reported in detail in 2003[1]. The antigen recognized by this antibody was named Er3 in 2004.

Occurrence

Most populations	>99.9%

Expression

Cord RBCs	Expressed

Effect of enzymes and chemicals on Er3 antigen on intact RBCs

Ficin/Papain	Presumed resistant
Trypsin	Presumed resistant
α-Chymotrypsin	Presumed resistant
DTT 200 mM	Presumed resistant
Acid	Sensitive

In vitro characteristics of alloanti-Er3

Immunoglobulin class	IgG
Optimal technique	IAT

Clinical significance of alloanti-Er3

Transfusion reaction	Mild in the only reported patient with anti-Er3
HDFN	No data because the only example of anti-Er3 was made by a male

Comments

Anti-Er3 reacted with RBCs from the only other Er(a−b−) person, whereas the antibody made by that person was compatible with RBCs from the maker of anti-Er3.

Reference

[1] Arriaga, F., et al., 2003. A new antigen of the Er collection. Vox Sang 84, 137–139.