

An individual with the $R_2R_0^{\text{Har}}$ phenotype was positive with three monoclonal anti-e and produced alloanti-e

Shane Grimsley
BBTS 2014

Referral

- Patient has anti-e
- Auto neg
- Phenotype: C−, c+, D+, E+, e+

Antibody Panel

	LISS IAT	
Cell	UNT	PAP
R1 ^W R1	2	5
R2R2	0	0
r'r	2	5
r''r	w	4
rr K+	2	5
rr K-	2	5
A rr	2	5
Self	0	0

Rh Phenotype

	C1	C2	c1	c2	D1	D2	D3	D4	E1	E2	e1	e2
CS1	0	0	5	5	5	5	5	5	3	5	5	0

Extended anti-e panel

	e3	e4	e5	e6	e7	e8	e9	e10	e11	e12	e13
CS1	0	0	0	0	0	0	1	3	4	4	4

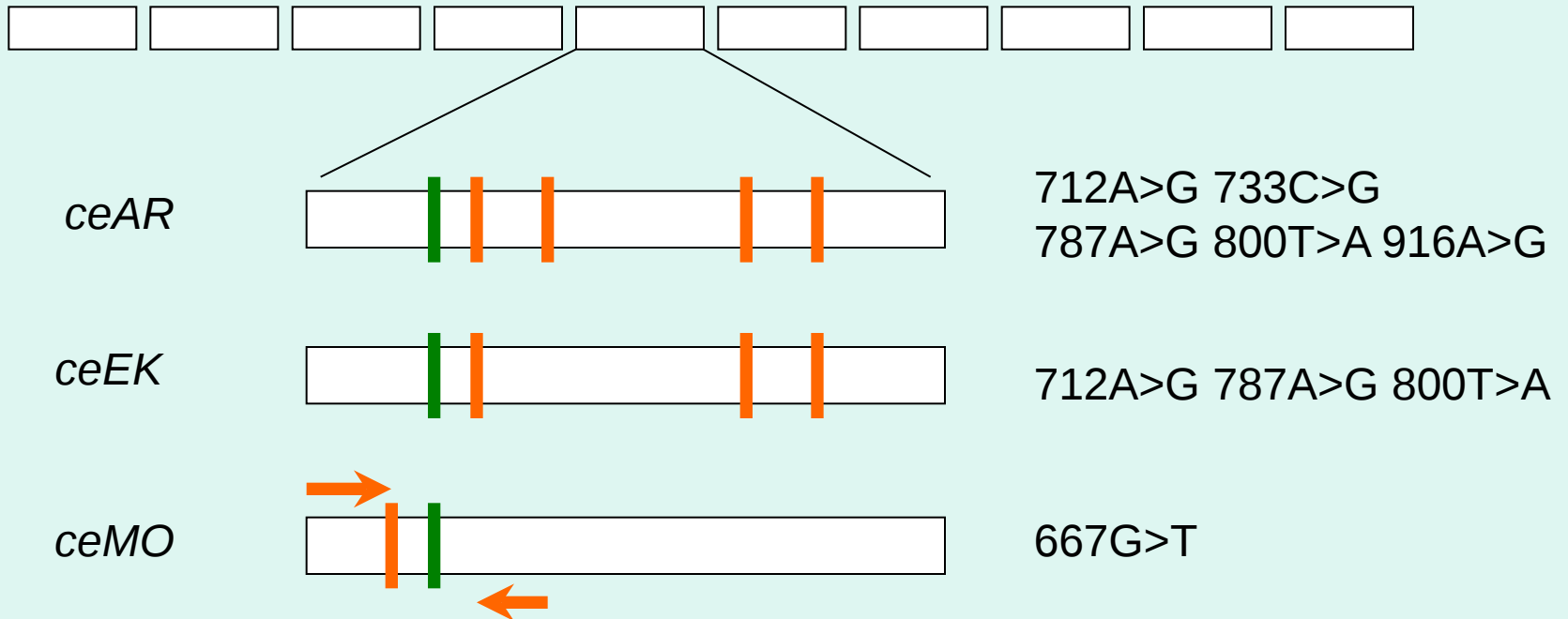
Summary of Serology

- Anti-e
- Negative autologous control
- Phenotype: e variant

Genotype

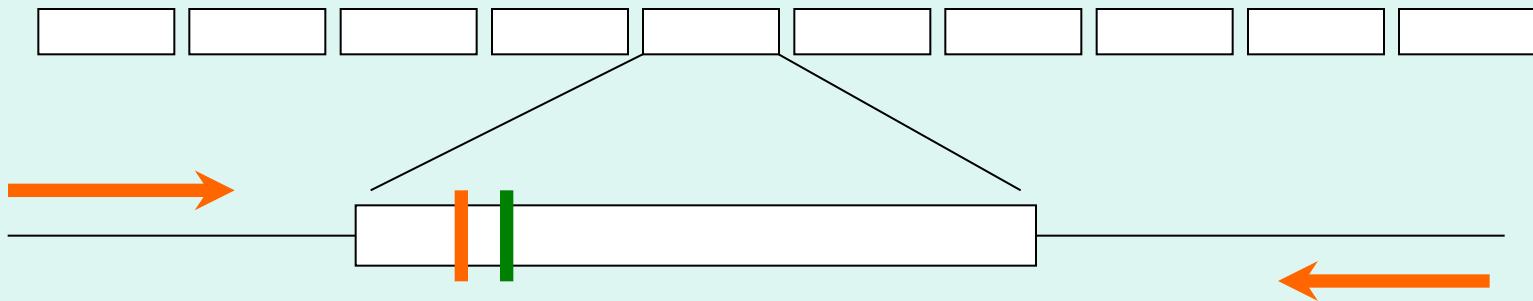
	C	c	D	E	e
CS1	-	+	+	+	-

e variant alleles



All have 676G = e
not 676C = E

Sequencing



Primers *RHCE* specific (Don't amplify *RHD*)

Sequencing

No Mutations

	C	c	D	E	e
CS1	-	+	+	+	-

Summary

- Genotype : cE/cE
- Sequencing : cE/cE No mutations
- Phenotype : Variant E
: Variant e

Genotype **PREDICTS** Phenotype

Phenotype **IS** Phenotype

Summary

- Genotype : cE/cE
- Sequencing : cE/cE No mutations
- Phenotype : Variant E
: Variant e

? Presence of e?

? 2 E alleles or 1

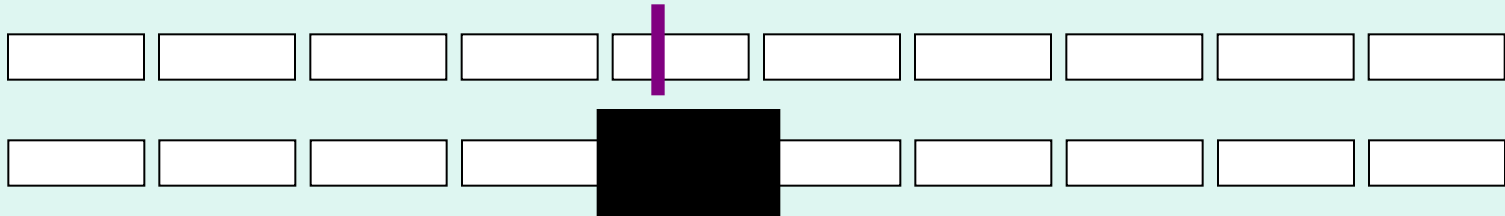
Anti-E Titre

	Neat	2	4	8	16	32
CS1	5	5	5	4	3	2
R ₂ r	5	5	5	5	5	4

	64	128	256	512	1024	2048
CS1	1	w	0	0	0	0
R ₂ r	4	3	2	1	w	0

Eureka Moment!

E (heterozygous and weak)



e (variant)

$$RHCE(1-4)-D(5)-CE(6-10) = R_0^{\text{Har}}$$

Explains: genotype AND sequencing results
of apparent R_2R_2

Can be tested for serologically

$R_2R_0^{\text{Har}}$

- CS1 extended phenotype Rh:–32,33,50
- Proves $R_2R_0^{\text{Har}}$ phenotype
- CS1 antibody shown to be negative with other $R_2R_0^{\text{Har}}$ cells
- E phenotype weak, possibly due to altered interaction of cE with R_0^{Har}

Why didn't we resolve the case sooner?

- Genotype
- Sequencing
- Initial e phenotype was not normal but also was not normal for e variant
- Literature states:
 R_0^{Har} very weak with anti-e

Anti-e panel

Polyclonals

Monoclonals

	e3	e4	e5	e6	e7	e8	e9	e10	e11	e12	e13
CS1	0	0	0	0	0	0	1	3	4	4	4

MS16

MS21

MS16 & 21

MS16 & 21

BS260

Conclusions

- Only 2 previous $R_2R_0^{\text{Har}}$ identified
- First $R_2R_0^{\text{Har}}$ with alloanti-e
- Genotype is a (very good) prediction of phenotype
- Auto control particularly important
- Monoclonal antisera and modern techniques may not show weakness with all variants

An individual with the $R_2R_0^{\text{Har}}$ phenotype
was positive with three monoclonal anti-e
and produced alloanti-e

BBTS 2014
Shane Grimsley

Thank you!
Questions?

Acknowledgments:

Nicole Thornton
Tom Bullock
Imelda Marais
Abi McNeill
Karen Desay

Jess Gill
Sue Search
Pete Martin
Kirstin Finning
Geoff Daniels