



# Serology vs Molecular Discrepancy Management-Case Study

**“More Information needed!!!”**

Lorena Aranda MS, MT,SBB (ASCP)<sup>CM</sup>  
Director – Immunohematology Reference Laboratory  
BioBridge Global – QualTex Laboratories

# Request for Antigen Negative Blood

- Request was received Thursday, **May 05, 2016**
  - Hospital Requested:
    - A Rh (D) Negative
    - Big C Negative
    - Little e Negative

- This is a very rare combination –
  - cdE/cdE (r''r'') **0.01%**
- Facility requested this combination due to:
  - Patient Serology typing as **A Rh(D) Negative**
  - Molecular Typing results
    - **C Negative/ e Negative**

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0
Kell	K	0
	k	+
	Kp <sup>a</sup>	0
	Kp <sup>b</sup>	+
	Js <sup>a</sup>	0
	Js <sup>b</sup>	+
Duffy	Fy <sup>a</sup>	+
	Fy <sup>b</sup>	0
Kidd	Jk <sup>a</sup>	0
	Jk <sup>b</sup>	+
MNS	M	+
	N	+
	S	+
	s	+
	U	+
Lutheran	Lu <sup>a</sup>	0
	Lu <sup>b</sup>	+
Diego	Di <sup>a</sup>	0
	Di <sup>b</sup>	+
Colton	Co <sup>a</sup>	+
	Co <sup>b</sup>	0
Dombrock	Do <sup>a</sup>	+
	Do <sup>b</sup>	+
	Hy	+
	Jo <sup>a</sup>	+
Landsteiner-Wiener	LW <sup>a</sup>	+
	LW <sup>b</sup>	0
Scianna	Sc1	+
	Sc2	0
Hemoglobin S	HbS	0

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0

Performed on April 09, 2016

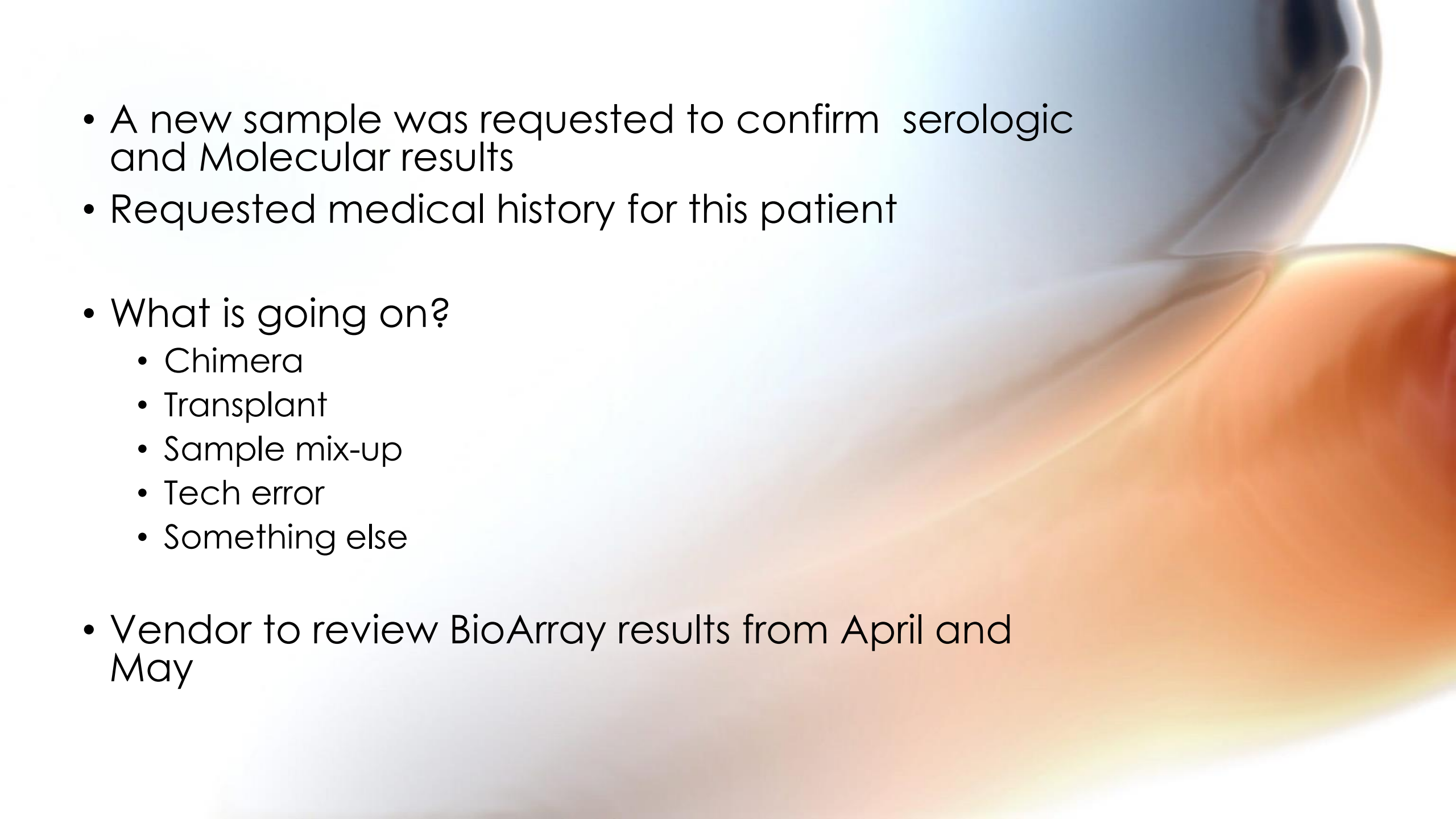
We informed facility that this combination is **very rare**

- We would have to request Blood from ARDP
- However we needed to confirm typing's
- We pulled the sample from April 09, 2016
  - Serologically typed as:
    - **Big C Negative**
    - **Big E Negative**
  - Re-extracted sample
  - Re-tested on BioArray

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0
Kell	K	0
	k	+
	Kp <sup>a</sup>	0
	Kp <sup>b</sup>	+
	Js <sup>a</sup>	0
	Js <sup>b</sup>	+
Duffy	Fy <sup>a</sup>	+
	Fy <sup>b</sup>	0
Kidd	Jk <sup>a</sup>	0
	Jk <sup>b</sup>	+
MNS	M	+
	N	+
	S	+
	s	+
	U	+
Lutheran	Lu <sup>a</sup>	0
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Diego	Di <sup>a</sup>	0
	Di <sup>b</sup>	+
Colton	Co <sup>a</sup>	+
	Co <sup>b</sup>	0
Dombrock	Do <sup>a</sup>	+
	Do <sup>b</sup>	+
	Hy	+
	Jo <sup>a</sup>	+
Landsteiner-Wiener	LW <sup>a</sup>	+
	LW <sup>b</sup>	0
Scianna	Sc1	+
	Sc2	0
Hemoglobin S	HbS	0

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0

Sample re-extracted and tested again on BioArray-May 07, 2016

- 
- A new sample was requested to confirm serologic and Molecular results
  - Requested medical history for this patient
  - What is going on?
    - Chimera
    - Transplant
    - Sample mix-up
    - Tech error
    - Something else
  - Vendor to review BioArray results from April and May

- Per Tech at requesting hospital
  - No transplant history in record
  - Patient was previously in Dallas-2013/2014 (now in San Antonio-2016)
    - No transplant in Dallas
- Attending physician is on Vacation (due back in one week)



- Update – More information
  - Patient Serologically typed by the IRL in Dallas (2013)
    - Rh (D) Positive
    - **Big C Negative**
    - **Big E Negative**
    - Little c Positive
    - Little e Positive
  - Patient previously typed by Dallas hospital (2014)
    - A Rh(D) Positive
    - **Big C Negative**
    - **Big E Negative**
    - K Negative
  - Patient ethnicity is Iranian

## • **More information**

- Patient was seen at a local hospital in SA August 2015
- Patient is currently typing as A Rh(D) Negative
- There is a time gap between Dallas and SA (2014 and 2015)
- Hospital tech in SA is trying to get more information directly from patient and doctor
- We spoke to other IRLs
  - Have not seen this discrepancy before
  - Suggestion was to perform Buccal Swab
- DNA was sent to Immucor for further molecular testing (also have not seen a discrepancy like this)

- June 16, 2016 – more information
  - Received Buccal Swab sample
  - Patient denied receiving Stem cell/bone marrow transplant
  - Immucor results
    - **RHD BeadChip:**
      - Rh(D) Positive (same as Dallas)

- **RHCE BeadChip**

C	c	E	e	Variant
0	+	+	0	WT/cE(602C)

- Extraction - testing with PerciseType HEA
  - C, e, Jka, Fyb, - Negative

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0
Kell	K	0
	k	+
	Kp <sup>a</sup>	0
	Kp <sup>b</sup>	+
	Js <sup>a</sup>	0
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Duffy	Fy <sup>a</sup>	+
	Fy <sup>b</sup>	0
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	S	+
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Colton	Co <sup>a</sup>	+
	Co <sup>b</sup>	0
Dombrock	Do <sup>a</sup>	+
	Do <sup>b</sup>	+
	Hy	+
	Jo <sup>a</sup>	+
Landsteiner-Wiener	LW <sup>a</sup>	+
	LW <sup>b</sup>	0
Scianna	Sc1	+
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Hemoglobin S	HbS	0

Blood Group	Antigen	Result
Rh	c	+
	C	0
	e	0
	E	+
	V	0
	VS	0

Buccal Swab Sample extracted and tested again on BioArray June 16, 2016

# June 21, 2016 – More Information

- Patient is 125 lbs., 21 years old
- Has Beta thalassemia major
- Has been transfused since she was 1 years old
- Is NOT compliant
- Usually gets 3 units per month
- No recent rectic count
- Physician keeps her rectic low – doesn't want her to make her own dysfunctional red blood cells
- She usually hemolysis her own cells
- Dr.'s goal is to keep her at a Hgb 10

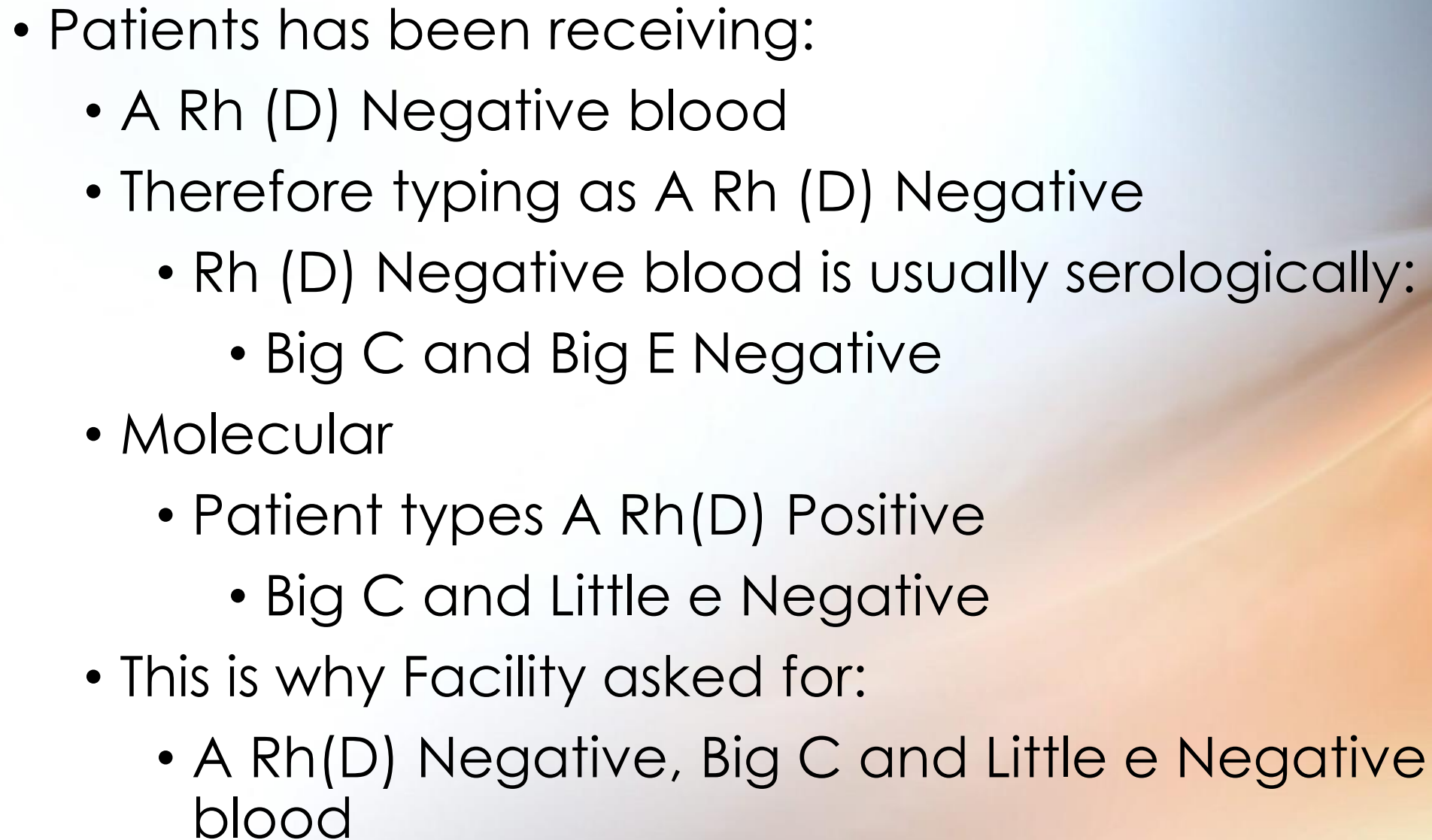
# So what happened...

## Request for Antigen Negative Blood

- Request was received Thursday, May 05, 2016
- Hospital requested:
  - A Rh (D) Negative
    - **Patient was receiving A Rh(D) Negative**
  - Big C Negative, Little e Negative
    - **Molecular RBCs phenotype with her DNA**

# So what happened...

- ABORh
  - Patient has been getting A Rh(D) Negative blood
  - Previously typed as A Rh (D) Positive
- Blood Group - Rh
  - Serological
    - **C Negative; E Negative**, c Positive, e Positive
  - Molecular
    - **C Negative**; E Positive; c Positive; **e Negative**

- 
- Patients has been receiving:
    - A Rh (D) Negative blood
    - Therefore typing as A Rh (D) Negative
      - Rh (D) Negative blood is usually serologically:
        - Big C and Big E Negative
  - Molecular
    - Patient types A Rh(D) Positive
      - Big C and Little e Negative
  - This is why Facility asked for:
    - A Rh(D) Negative, Big C and Little e Negative blood



# What do we do now

- Breath!!!
- Give patient
  - A Rh(D) Positive
- Wait to give big C and/or Little e until she makes it!!!???



More information Needed!!

- Discrepancy resolved
  - Serology Correct
  - Molecular Correct



Thank you!