

## A Subgroups

Review of A<sub>1</sub> and A<sub>2</sub> reactions:

Reagents					Antibodies in Serum		Other	
Phenotype	Anti-A	Anti-B	Anti-A,B	Anti-A1	Common	Unexpected	Substances Present in Saliva of Secretors	# of Antigen sites RBC x 10 <sup>3</sup>
A <sub>1</sub>	4+	0	4+	4+	Anti-B	None	A, H	810-1,170
A <sub>2</sub>	4+	0	4+	0	Anti-B	Anti-A <sub>1</sub> (1-8% of cases)	A, H	240-290

A Subgroups other than A<sub>1</sub> and A<sub>2</sub>:

1% of individuals

Characteristics:

- Decreased number of A antigen sites (weak/no agglutination with anti-A)
- Varying agglutination with anti-A,B
- Increased detectability of H antigen (strong anti-H reactions)
- Can have anti-A<sub>1</sub> in serum

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>3</sub>	+mf	0	+mf	3+	no	Yes	Some	A, H	Sometimes	35
A <sub>x</sub>	wk/0	0	2+	4+	no/wk	Yes	Almost always	H	Rarely	4
A <sub>end</sub>	wk mf	0	wk mf	4+	no	Yes	Some	H	No	3.5
A <sub>m</sub>	0/wk	0	0/wk	4+	no	Yes	No	A, H	Yes	1
A <sub>y</sub>	0	0	0	4+	no	Yes	No	A, H	Trace	1
A <sub>el</sub>	0	0	0	4+	some	Yes	Yes	H	No	.7

### A<sub>3</sub> Subgroup:

- **Mixed-field** with anti-A and anti-A,B- some cells react with anti-A others don't
- Decrease antigen sites to 35,000 per red cell

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>3</sub>	+mf	0	+mf	3+	no	Yes	Some	A, H	Sometimes	35

### A<sub>x</sub> Subgroup:

- Many times **no or weak anti-A agglutination**
- Only A subgroup that **agglutinates anti-A,B very well**
- Decreased to 4,000 antigen sites
- **Usually produce anti-A<sub>1</sub>**
- **Can be confused with Group O** (If negative with anti-A and weak reactivity with A1 cells in backtype it will type like an O)

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>x</sub>	wk/0	0	2+	4+	no/wk	Yes	Almost always	H	Rarely	4

### A<sub>end</sub> Subgroup:

- Weak **mixed field with anti-A and anti-A,B**
- Even fewer antigen sites (3,500)

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>end</sub>	wk mf	0	wk mf	4+	no	Yes	Some	H	No	3.5

A<sub>m</sub> Subgroup:

- No or weak anti-A and anti-A,B reactions
- Usually no anti-A1
- Barely 1,000 antigen sites

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>m</sub>	0/wk	0	0/wk	4+	no	Yes	No	A, H	Yes	1

A<sub>y</sub> Subgroup:

- No anti-A or anti-A,B reactions/agglutination
- No anti-A1

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>y</sub>	0	0	0	4+	no	Yes	No	A, H	Trace	1

A<sub>el</sub> Subgroup:

- No anti-A or anti-A,B reactions/agglutination
- Produces anti-A1

	Reagents				Antibodies in Serum			Other		
Pheno type	Anti-A	Anti-B	Anti-A,B	Anti-H	Anti-A	Anti-B	Anti-A1	Substance in secretions	Presence of A transferase	Number antigen sites RBC x 10 <sup>3</sup>
A <sub>el</sub>	0	0	0	4+	some	Yes	Yes	H	No	.7