

An anatomical illustration of a human torso, showing the ribcage and spine in a light blue, semi-transparent style. A glowing orange heart is positioned on the left side of the chest, with several red vessels extending from it. The background is a deep blue with a subtle, repeating pattern of a human hand. The text "Blood Typing Notes & Lab" is centered in white, bold font.

Blood Typing Notes & Lab

Biology I

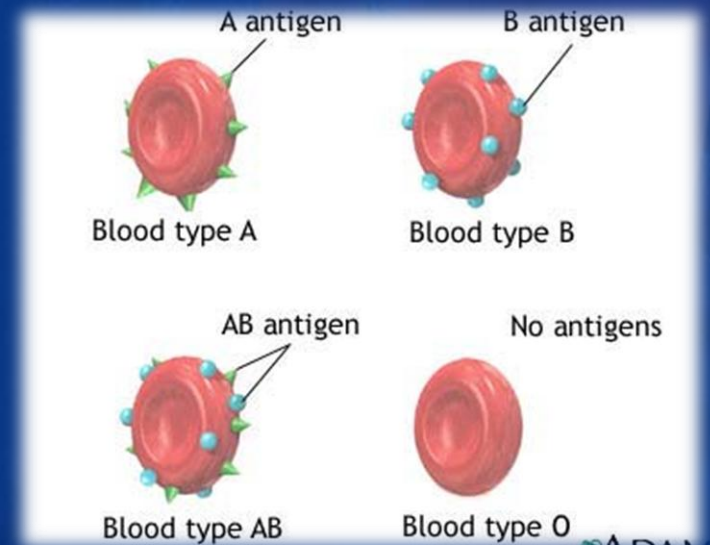
How blood types work

- Blood type is determined by two sets of genes
 - ABO
 - Rh
- The ABO gene determines the “letter” of your blood
- The Rh gene determines the positive or negative of your blood



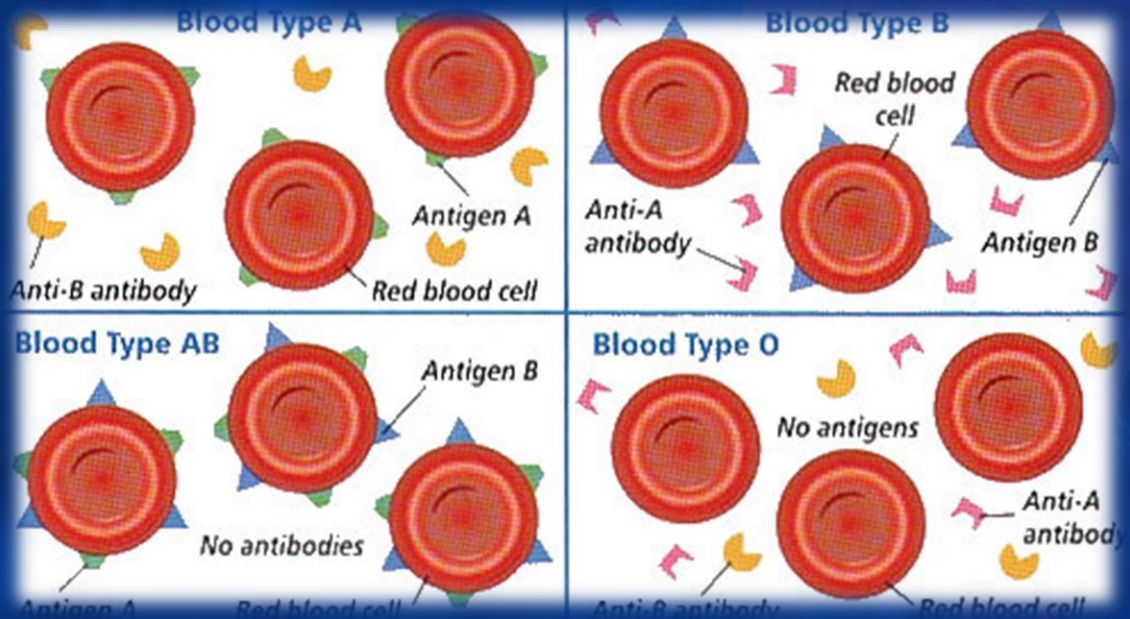
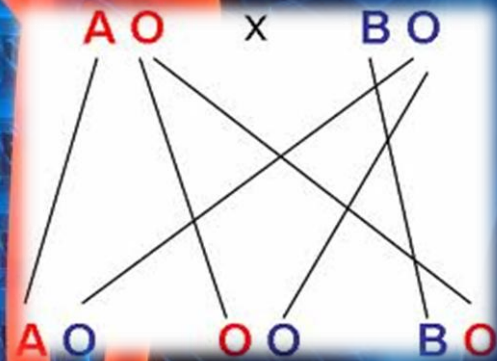
ABO blood type

- There are three different ABO genes
 - A
 - B
 - O
- Genes determine what antigen (protein) is made
 - Gene A makes antigen A
 - Gene B makes antigen B
 - Gene O makes no antigens



ABO blood type

- Dominant vs. Recessive
 - A & B are codominant
 - When both are present, both antigens get made
 - O is recessive to both A & B



Rh blood type

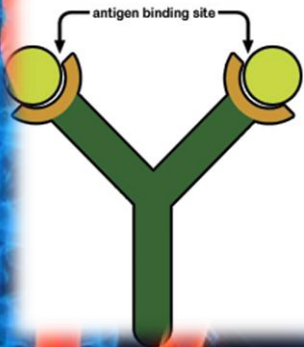
- There are two different Rh genes
 - Rh +
 - Rh -
- Genes determine what antigen (protein) is made
 - Rh + gene makes Rh antigen
 - Rh - makes no antigen



Antibodies

- Antibodies are defense proteins that fight foreign antigens
- Antibodies are specific to one antigen
- When antibody & antigen meet, clumping occurs
- This can be dangerous (even fatal)
- Your body automatically makes antibodies for blood antigen that you do not have

ANTIBODY MOLECULE



Antibodies are proteins that are produced by the body to fight the intrusion of foreign molecules, such as toxins or other poisons. The antibodies are designed to bind very tightly to their target molecules (i.e., the antigens).

Fill in the ABO chart

Phenotype (blood type)	Genotype(s)	Antigen(s)	Antibody(ies)	Possible gametes
A				
B				
AB				
O				

Fill in the Rh chart

Phenotype (blood type)	Genotype(s)	Antigen(s)	Antibody(ies)	Possible gametes
Rh+				
Rh-				

Fill in the blood donation chart

	A	B	AB	O	Rh+	Rh-
Blood types you could receive						
Blood types that you could donate to						

“Special” blood types

- Blood type #1 – Can receive from any other blood type
 - AB+
 - Universal recipient



- Blood type #2 – Can donate to any other blood type
 - O-
 - Universal donor





Blood type distribution

38% are **O+**

9% are **O-**

32% are **A+**

6% are **A-**

9% are **B+**

2% are **B-**

3% are **AB+**

1% are **AB-**

Blood Typing Lab

- Supplies:
 - Blood samples
 - Antibody sera (Anti-A, Anti-B, Anti-Rh)
 - Mixing slides

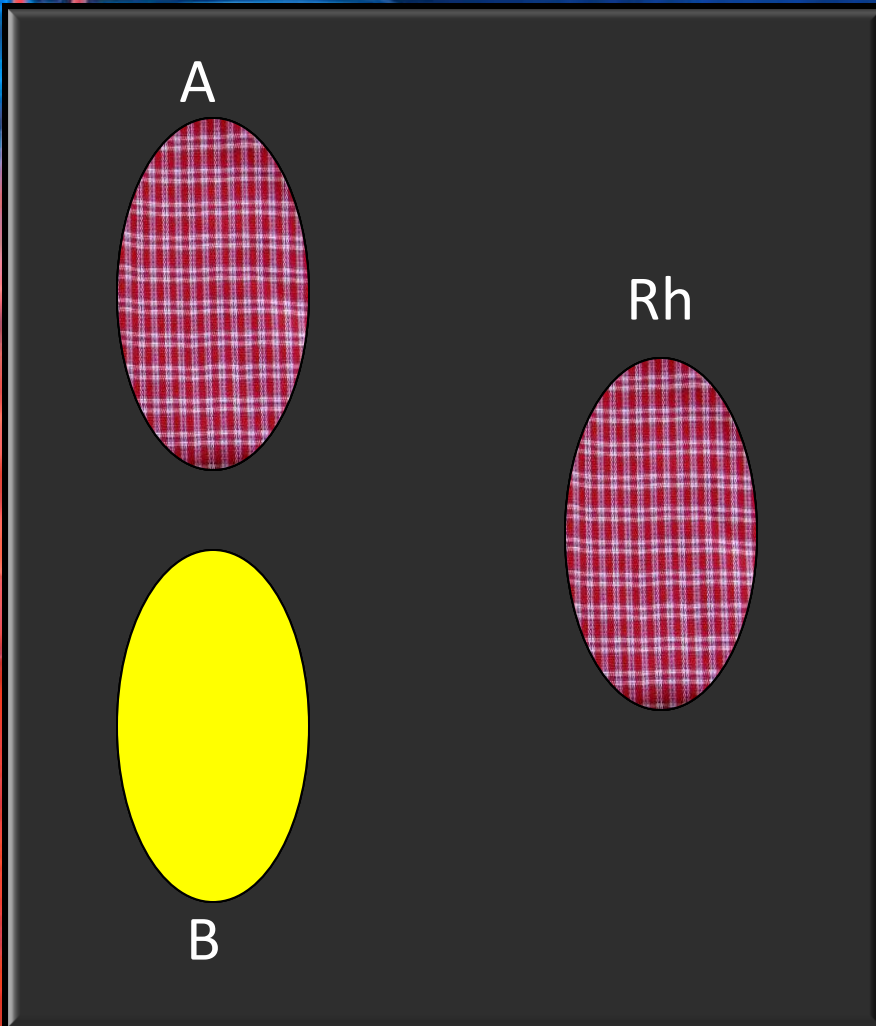


Blood typing lab

- Basic procedure
 1. Put blood sample in all 3 wells of slide
 2. Add antibody sera to appropriate well with blood
 3. Mix
 4. Look for clumping / crystallization / major color change
 - Any of these indicate a positive result for the antigen being tested for



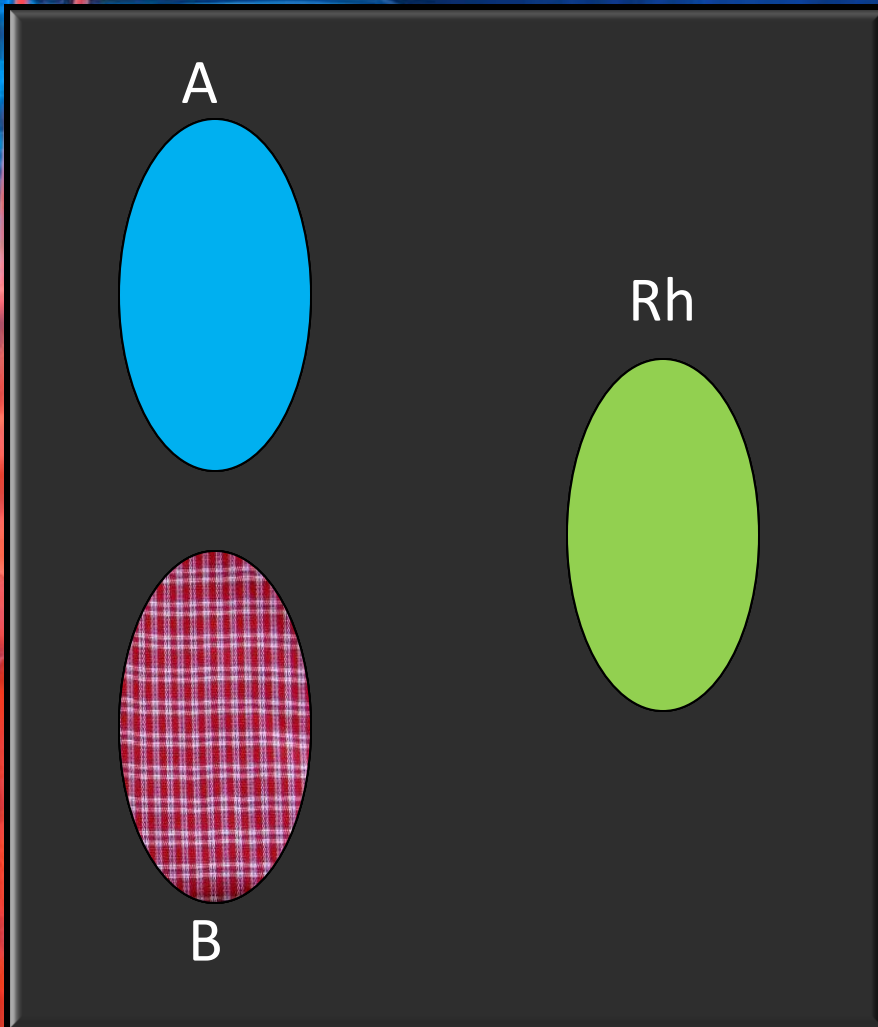
Blood sample 1 – Mr. Jones



Procedure

1. Add blood samples
2. Add antibody sera
 - a. Anti-A
 - b. Anti-B
 - c. Anti-Rh
3. Mix & look for results
4. Fill in appropriate oval on your result page

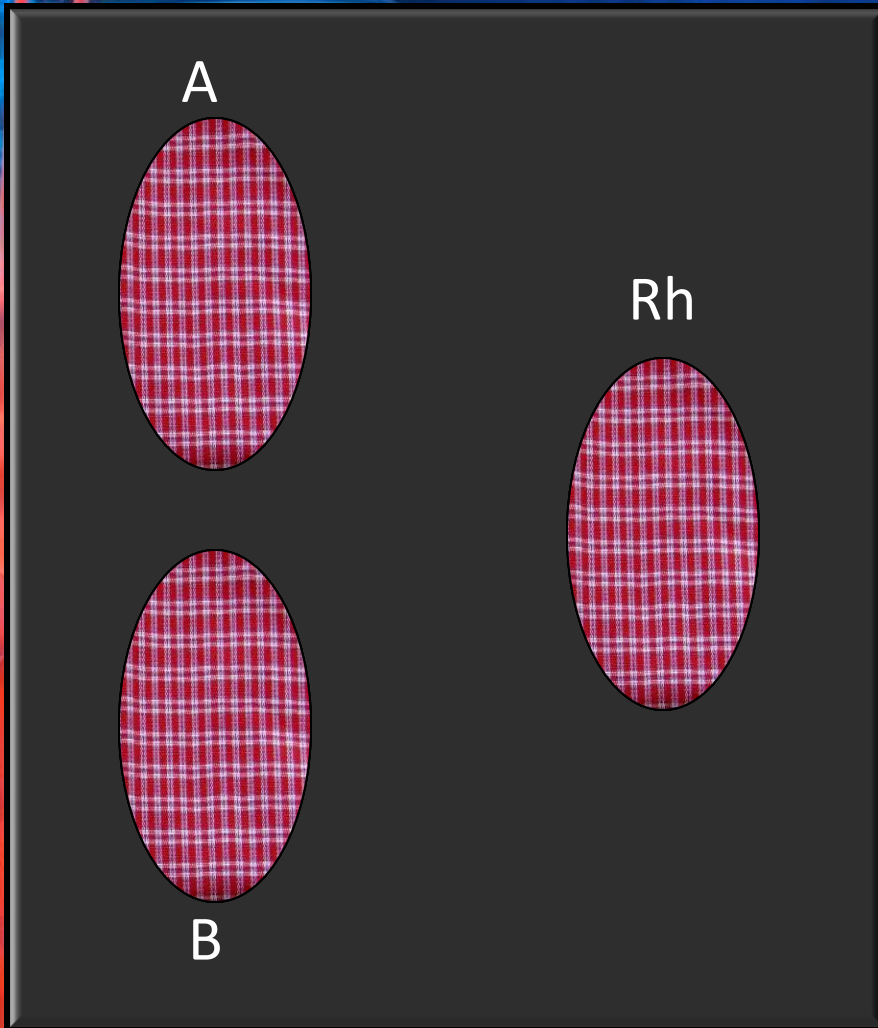
Blood sample 2 – Mrs. Jones



Procedure

1. Add blood samples
2. Add antibody sera
 - a. Anti-A
 - b. Anti-B
 - c. Anti-Rh
3. Mix & look for results
4. Fill in appropriate oval on your result page

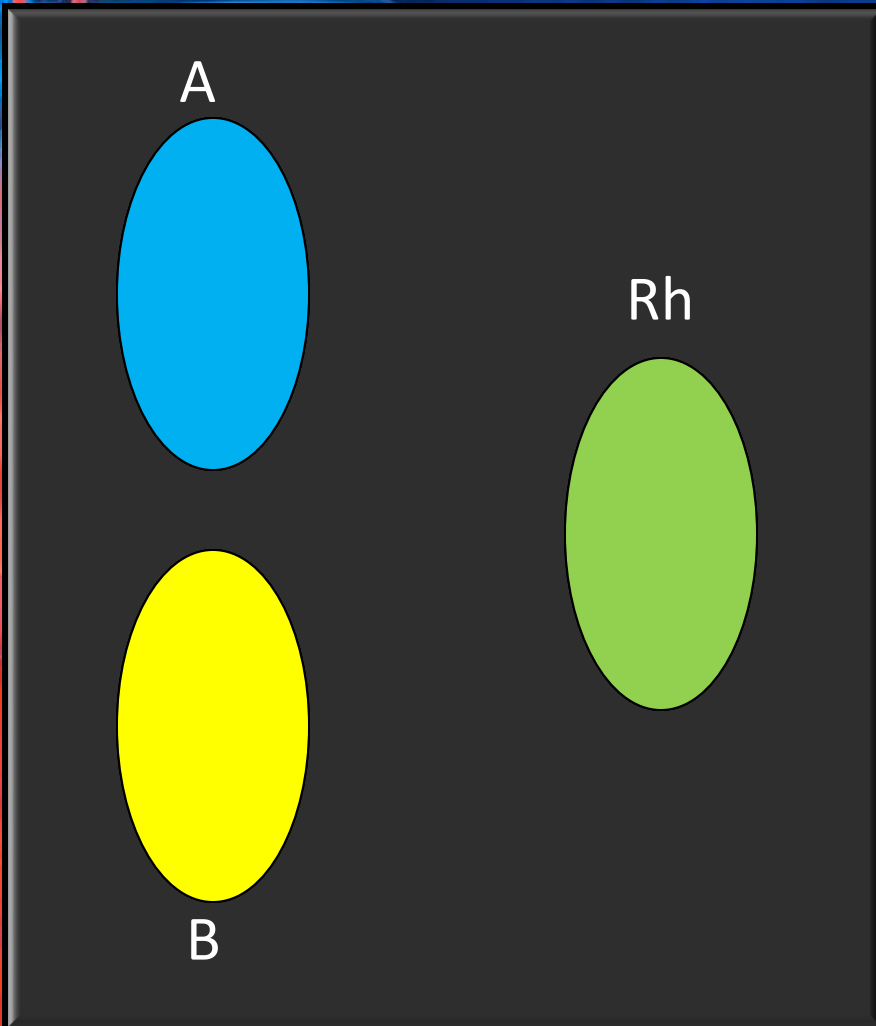
Blood sample 3 – Mr. Green



Procedure

1. Add blood samples
2. Add antibody sera
 - a. Anti-A
 - b. Anti-B
 - c. Anti-Rh
3. Mix & look for results
4. Fill in appropriate oval on your result page

Blood sample 4 – Baby Susie

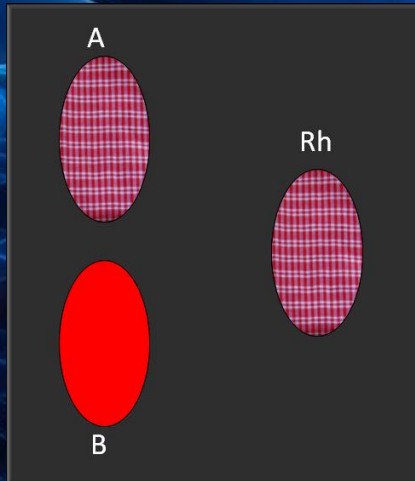


Procedure

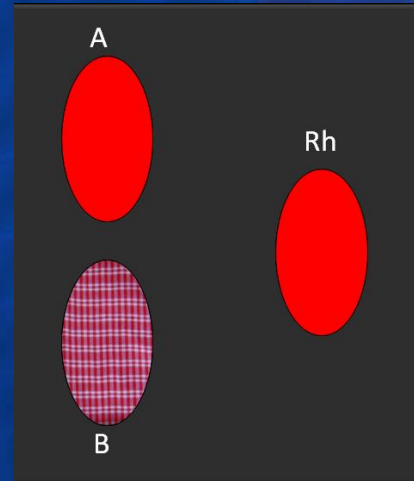
1. Add blood samples
2. Add antibody sera
 - a. Anti-A
 - b. Anti-B
 - c. Anti-Rh
3. Mix & look for results
4. Fill in appropriate oval on your result page

Result summary

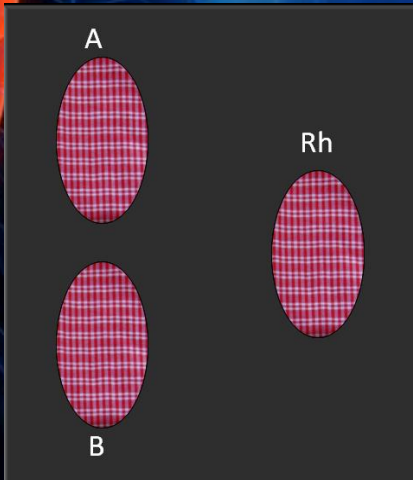
Sample 1 – Mr. Jones



Sample 2 – Mrs. Jones



Sample 3 – Mr. Green



Sample 4 – Baby Susie

