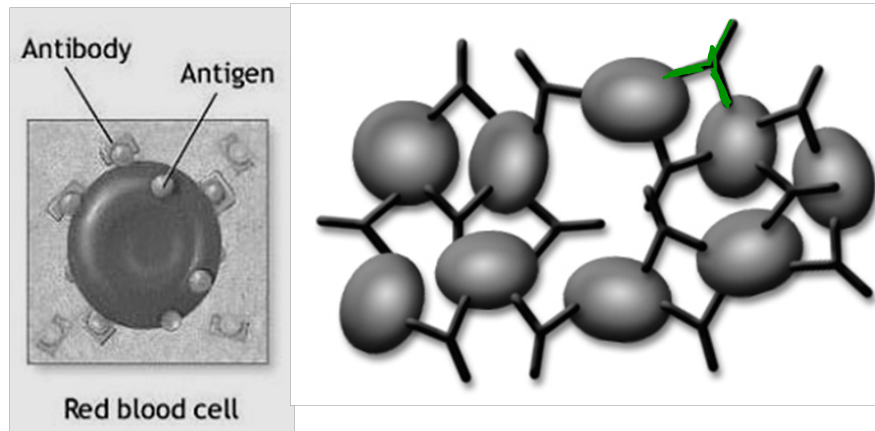









Blood Type:

ABO blood types:

- People can have different blood types
- Blood type is determined by the type of antigen attached to red blood cells
 - Antigens are glycoprotein's (carbohydrate + protein)
- Type A blood - A antigens, B antibodies: can't receive B or AB
- Type B blood - B antigens, A antibodies: can't receive A or AB
- Type AB blood - A and B antigens, no antibodies: can receive all types
- Type O blood - No antigens (universal donor), A and B antibodies: can't receive A, B or AB
- Antibodies are produced when a foreign antigen is detected in the body
 - The antibodies float around in the blood plasma
 - If you are type A blood, any other blood antigen is foreign to you and you have antibodies to defend against them
 - Same goes for type B and type AB blood
- Antibodies cause **agglutination** - the clumping of blood cells (not clotting)
 - The clumped blood can no longer fit through capillaries



The ABO Blood System				
Blood Type (genotype)	Type A (AA, AO)	Type B (BB, BO)	Type AB (AB)	Type O (OO)
Red Blood Cell Surface Proteins (phenotype)	 A agglutinogens only	 B agglutinogens only	 A and B agglutinogens	 No agglutinogens
Plasma Antibodies (phenotype)	 b agglutinin only	 a agglutinin only	NONE No agglutinin	 a and b agglutinin

Rheus (Rh) Factor:

- In the 1940's another antigen was discovered on red blood cells, called the Rheus factor
- If antigen is present, blood is said to be Rh + ; 85% of Canadians
- If antigen is absent, blood is said to be Rh - ; 15% of Canadians
- Individuals who are Rh - can donate blood to Rh + but should not receive Rh + blood
- **Erythroblastosis fetalis** (blue baby syndrome):
 - A condition that occurs when a mother's antibodies against Rh⁺ blood enter the Rh⁺ blood of her fetus (baby inherits the Rh⁺ from the father).
 - Therefore, **only important with Rh⁺ babies and Rh⁻ mothers.**
 - 1st child is not affected b/c the mothers and babies blood is separated by the placenta, until after birth.
 - Capillary beds rupture when the placenta is shed from the uterus in birth, this is the first time blood is mixed.
 - The mothers immune system will recognize the Rh⁺ antigens and this will trigger the production of antibodies.
 - These antibodies will not effect the baby, because by the time they are produced the baby will no longer be attached to the placenta.

