**Multiple Allele Examples – Blood Types**

1. A father has blood type O. The child has type A. What is the mother’s possible phenotype(s) and genotype(s)? What genotype(s) can she NOT be?
2. Is it possible for parents who both have type B blood to have a child who is type O? Diagram a cross to prove they can, and another cross to prove they cannot.

1. What is the blood type of a child who inherited an allele for blood type A from its mother and type O from its father?
2. What are the possible offspring born to a mother who is homozygous type A and a father who is homozygous type B?

1. Cross a heterozygous type A with type AB. Give the phenotypic and genotypic ratios.
2. A woman with type A blood has a type B child. Of the list below, who could be the father? Justify your answer.

Ricky – AB

Mac – B

Zac – A

Kirkland – O

1. A woman with type A blood has a child with type O blood. She is suing a man with type B blood for child support, because she claims the man is the father of her child. How would you respond to the statements below?
   1. The attorney for the alleged father claims “The mother is type A, so the Child’s type O blood must have come from the father. Because my client is type B, he cannot be the father.” Use a punnett square to back up this attorney’s statement.
   2. The attorney for the mother claims “Because further tests prove he is heterozygous, he must be the father.” Diagram a cross to back up the attorney.

**Multiple Alleles – P. 542**

* many genes have more than two alleles
* **multiple alleles** - pattern of inheritance when a gene may have more than two alleles for any given trait.
* examples: blood types, skin color, eye color
* end up with several variations of phenotypes (ex. Eye color: blue, brown, hazel, green)
* multiple alleles can be influenced by environmental factors, such as diet and climate.
* Ex. It is important that anyone with a genetic disorder know the effects of diet or other behaviour on the symptoms (ex. A person genetically predisposed to have diabetes may delay or prevent diabetes by eating healthy and exercising)