

Topics	Notes, Diagrams, Drawings
What controls traits?	<ul style="list-style-type: none"> • 2 factors, one from each parent, controls each trait • one factor from the egg and one factor from the sperm (159)
What are chromosomes?	<ul style="list-style-type: none"> • Define: threadlike structures inside the nucleus, contain genetic information that control traits • exist as pairs- one chromosome from each parent (159)
What are genes?	<ul style="list-style-type: none"> • Define: a section of a chromosome that has genetic information for one trait • each chromosome can have information about hundreds or thousands of traits (160)
What are alleles?	<ul style="list-style-type: none"> • Define: the 2 different forms of a gene- one from each parent • can be the same or different (160)
What is a phenotype?	<ul style="list-style-type: none"> • Define: how a trait appears or is expressed, what you can <i>observe</i> (160)
What is a genotype?	<ul style="list-style-type: none"> • Define: the 2 <i>alleles</i> that control the phenotype of a trait • you cannot see an organism's genotype • you can make inferences about a genotype based on its phenotype (160)
What are the symbols for genotype?	<ul style="list-style-type: none"> • <i>uppercase letters</i> represent dominant alleles • <i>lowercase letters</i> represent recessive alleles (161) <p>Phenotype (observed traits) dominant recessive Genotype (alleles of a gene) RR Rr rr</p>

<p>What is homozygous?</p>	<ul style="list-style-type: none"> • Define: when the 2 alleles of a gene are the same in a genotype (RR or rr) (161)
<p>What is heterozygous?</p>	<ul style="list-style-type: none"> • Define: when the 2 alleles of a gene are different in a genotype (Rr) (161)
<p>How is inheritance modeled?</p>	<ul style="list-style-type: none"> • the chance of getting an outcome can be represented as a <i>ratio</i> • 2 models can be used to predict and identify traits among genetically related individuals: <ul style="list-style-type: none"> • Punnett squares • pedigrees (162)
<p>What are Punnett squares?</p>	<ul style="list-style-type: none"> • Define: a model used to predict possible genotypes and phenotypes of offspring (162)
<p>How are Punnett squares analyzed?</p>	<p>FIGURE 7: Yy and Yy parents (161)</p> <ol style="list-style-type: none"> 1. male alleles along top 2. female alleles along side 3. copy male alleles down, copy female alleles across 4. list dominant allele first <p>genotypes 1:2:1 (YY, Yy, Yy, yy) phenotypes 3:1 (3 dominant yellow, 1 recessive green)</p>
<p>How are ratios used to predict?</p>	<ul style="list-style-type: none"> • given a 3:1 ratio, you can predict that an offspring from heterozygous parents will have a 3:1 chance of dominant trait • one offspring does not affect the phenotype of another offspring • given a large number of offspring from a particular cross, the overall ratio would be similar to the ratio predicted by a Punnett square (162)

<p>What is a Pedigree?</p>	<ul style="list-style-type: none"> • a model that can show inherited traits • shows the phenotypes of genetically related family members • can also help determine genotype <ul style="list-style-type: none"> • ex: 3 offspring have a trait that neither parent has, if offspring receive one allele from each parent, but neither parent displays the trait, the offspring must have received 2 recessive alleles (162)
<p>What are the types of dominance?</p>	<ul style="list-style-type: none"> • Define: <i>incomplete dominance</i>: when the offspring's phenotype is a combination of the parents phenotypes (Ex: white flower + red flower → pink flower) • Define: <i>codominance</i>: when both alleles can be observed in a phenotype (ex: white cow + red cow → red and white [roan] cow) (164)
<p>What are the effects of multiple alleles?</p>	<ul style="list-style-type: none"> • a trait that is determined by multiple alleles • ex: human blood type ABO: <ul style="list-style-type: none"> • 3 different alleles I^A, I^B, i • the way the alleles combine result in 1 of 4 blood types: A, B, AB, or O • I^A and I^B codominant to each other, but both are dominant to i (165)
<p>what is polygenic inheritance?</p>	<ul style="list-style-type: none"> • Define: when multiple genes determine the phenotype of a trait • because several genes determine a trait, many alleles affect the phenotype even though each gene has only 2 alleles (ex: eye color) (165)

How are genes and the environment related?

- an organism's environment can also affect phenotypes (ex: sunlight and temperature)
- environmental effects on phenotypes for humans: healthy choices can affect phenotype (166)