

Content/Academic Language						
FLDOE	allele characteristic clone**	codominant dominance F1 generation	gene genetic genotype	heredity heterozygous homozygous	inherited trait offspring P generation	phenotype polygenic recessive
Other	biotechnology dihybrid ethics	hybrid incomplete dominance law of independent assortment	law of segregation monohybrid pedigree	probability Punnett square purebred	ratio sex-linked	

Topic 1: Genetics		
SC.912.L.16.1 Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance (parent benchmark on Biology 1 EOC assessment).	High	<ul style="list-style-type: none"> ● explain that according to the law of segregation, the 2 alleles for each trait separate during meiosis ● recognize that the law of independent assortment describes how different traits are given an equal opportunity of occurring together ● explain that Punnett squares are used to make predictions about offspring, while pedigrees are used to trace a genetic trait through multiple generations ● recognize that a Punnett square only shows the probability that offspring will have a certain genotype (they do NOT predict actual outcomes)
SC.912.L.16.2 Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, co-dominant, sex-linked, polygenic, and multiple alleles (assessed as SC.912.L.16.1 on Biology 1 EOC assessment).	High	<ul style="list-style-type: none"> ● differentiate between dominant & recessive alleles ● explain the relationship between a genotype & a phenotype ● create Punnett squares (monohybrid & dihybrid crosses) to find combinations of alleles in potential offspring & determine the probabilities (in %, ratios, & fractions) of specific genotype & phenotype outcomes ● describe how the alleles of a genotype are expressed in the phenotype of an individual in various modes of inheritance <ul style="list-style-type: none"> ○ in codominance both alleles contribute to the phenotype of a heterozygous individual (both parents' traits are visible in the offspring) ○ in incomplete dominance neither allele is dominant (the phenotype of the offspring is a blend of both parents' traits) ○ in sex-linked inheritance, the phenotypic expression of an allele is related to the chromosomal sex of the individual ○ in polygenic inheritance, a single phenotype is affected by more than 1 gene (i.e., eye/hair/ skin color) resulting in a range of "shades/degrees"

		<ul style="list-style-type: none"> ○ in multiple alleles, more than 2 alleles in a single gene affect the phenotype (i.e., blood types A, B, AB, O) ● analyze pedigrees to determine the probability of a genotype or phenotype of a specific individual
HE.912.C.1.7 Analyze how heredity and family history can impact personal health (not assessed on Biology 1 EOC assessment).	N/A	<ul style="list-style-type: none"> ● evaluate the impact heredity has on the health of the individual (i.e., heart disease)
SC.912.N.3.4 Recognize that theories do not become laws, nor do laws become theories; theories are well-supported explanations, and laws are well-supported descriptions (assessed as SC.912.L.14.1 on Biology 1 EOC assessment).	Moderate	<ul style="list-style-type: none"> ● recognize that Mendel's laws only describe the behavior he observed; they do not provide an explanation for the inheritance patterns he observed
Topic 2: Biotechnology		
SC.912.L.16.10 Evaluate the impact of biotechnology on the individual, society, and the environment, including medical and ethical issues (parent benchmark on Biology 1 EOC assessment).	High	<ul style="list-style-type: none"> ● recognize that the fundamental aim of biotechnology is to meet human needs or demands in order to improve quality of life ● discuss the benefits of biotechnologies & their potential drawbacks ● explain the possible impact of biotechnology on the individual, society, and the environment
**SC.912.L.16.12 Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reactions, ligation, & transformation) is used to construct recombinant DNA molecules (DNA cloning) (not assessed on Biology 1 EOC assessment).	Moderate	<ul style="list-style-type: none"> ● explain how DNA technology is utilized to benefit society ● discuss the medical and ethical implications in manipulating DNA ● summarize the basic methods of DNA technology
SC.912.N.2.2 Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion (not assessed on Biology 1 EOC assessment).	High	<ul style="list-style-type: none"> ● discuss how people's needs and values vary, leading to different views of how a particular biotechnology may impact them ● recognize that not all questions can be answered through scientific investigation