**Unit 3: Genetics Study Guide**

 **SB2a (DNA & RNA)**

1. What is the sequence in a DNA molecule that determines the proteins to be produced?
2. What is A DNA molecule that is produced by combining DNA from different sources or organisms is called?
3. Know what types of genetic code can be found in RNA.
4. What type of RNA acts like a delivery truck, delivers amino acids to the ribosome for protein synthesis, and then leaves empty again, to go collect another amino acid?
5. What are the characteristics of RNA?
6. How are DNA & RNA different?
7. What base is found in RNA but not in DNA?

**SB2b (Transcription, Translation, DNA Replication):**

1. How is your gender determined?
2. What is the function of a chromosome?
3. What happens when there is a simple change in a cell’s DNA?
4. Where is the information coded that is passed down or inherited from our parents?
5. What part of the DNA is responsible for the inheritance of a trait?
6. Where is DNA found in a eukaryotic cell?
7. Be able to read a chart and identify which example is DNA. Know the components of DNA.

**SB2c (Mendelian Genetics):**

1. If two heterozygous plants are crossed, what is the probability that the offspring will be short?
2. Be able to read and recognize a genotypic ration from looking at a Punnett square.
3. Know Mendel’s law of segregation and the results of it.
4. What is the process of alleles being passed down to offspring from its mother and father?
5. Be able to read and assess a dihybrid cross.
6. Be able to work a complete dominance Punnett square.

**SB2d (Mutations, Genetics Disorders):**

1. How does Turner’s syndrome occur?
2. What are the circumstances that can produce a new combination of genetic traits in sperm and eggs?
3. What are the different chromosomal mutations?
4. How are mutations passed from parent to offspring?
5. Know the effects of a point mutation in the mRNA sequence?
6. Which processes are associated with genetic abnormalities?
7. What types of changes do transcription and translation errors cause in organisms?

**SB2e (Meiosis):**

1. Which best describes gene sequencing in organisms?
2. If the organism has 12 chromosomes, what is its diploid number?
3. What are the advantages to meiosis
4. What are the differences between mitosis and meiosis?
5. What is the goal of meiosis?
6. What are the disadvantages of asexual reproduction (mitosis)?
7. Which process accounts for species diversity?

**SB2f (Genetic Technology):**

1. What is gel electrophoresis used in?
2. What is DNA technology used for?
3. Be able to read a graph and identify who matches the DNA given.
4. Be able to read a pedigree.
5. What are the consequences of selective breeding a crop species?
6. What are the applications of gene therapy?