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| **Learning Goals: Genetics, DNA, and Cell Processes** | |
| **Guiding Question**:  How do scientists explain the similarities and variation in different organisms over time? | |
| Content Goals Students will be able to:   * Use a Punnett square to determine possible characteristics in offspring * Describe the structure and function of DNA (phosphate, sugar, and base) * Describe the structure and function of RNA (similarities and differences between DNA and RNA) * Explain how DNA information is transcribed: *transcription* * Explain how DNA information is translated to make proteins: *translation* * Describe the phases of the cell cycle and mitosis * Identify the steps of DNA replication * Describe the phases of meiosis * Compare and contrast mitosis and meiosis * Explain the cause and effect of mutations in DNA * Describe how biotechnology has impacted medical treatments, criminal justice, and food supply * Explain how DNA processes and environmental factors both play a significant role in causing variation within species and between species | Skills Goals Students will be able to:   * Identify topic of text * Summarize main idea in text * Summarize supporting statements used to develop the main idea * Present data in well-organized tables * Present data in informative graphs * Include properly referenced quote in paragraph * Write APA citation for source used |
| **Organizing Ideas** (Big Ideas and Links between Big Ideas)  Students will understand:  - how DNA is replicated in new cells or passed on to offspring  - how DNA can vary from one generation to the next  - how information in DNA results in protein synthesis | |
| **Assessment** – How will I know if students have mastered content, skills, and big ideas?  - Summary and analysis of scientific article  - Student-generated data tables and graphs  - Individual assessments such as tests and quizzes | |

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| **Key Vocabulary** | | |
| **Trait**  **Allele**  **Dominant**  **Recessive**  **Genotype**  **Phenotype**  **Heterozygous**  **Homozygous**  **Chromosome**  **DNA**  **Nucleotide**  **Bases (A,T, G, C)** | **Protein**  **RNA**  **Transcription**  **Translation**  **Codon**  **Amino acid**  **Mitosis**  **Interphase**  **Prophase**  **Metaphase**  **Anaphase**  **Telophase** | **Meiosis**  **Homologous chromosomes**  **Diploid**  **Haploid**  **Gamete**  **Zygote**  **Crossing over**  **Karyotype**  **GMO**  **Cloning** |

 