

**UNIT 5: REPRODUCTION IS THE GOAL**

**Teacher Name:** Rebecca Cottington

**Grade/Course:** Biology

**Dates of Unit:** ~6 weeks

| Stage 1 – Desired Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
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| Unit Topic and Length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| Reproduction is the Goal<br>~7 weeks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| Curriculum Indicators/Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| <p>B-LS.21: Identifies and explains the three major kinds of life cycles (i.e., gametic, zygotic, and sporic).</p> <p>B-LS.22: Explains how all organisms begin their life cycles as a single cell and that in multicellular organisms differentiate into a collection of specialized cells.</p> <p>B-LS.23: Differentiates between unicellular and multicellular life cycles</p> <p>B-LS.24: Identifies and explains the cell cycle (interphase, prophase, metaphase, anaphase, telophase, cytokinesis).</p> <p>B-LS.25: Explains how interactions among the different molecules in the cell cause the distinct stages of the cell cycle which can also be influenced by other signaling molecules.</p> <p>B-LS.30: Explains the viral reproductive process including 1) a virus must insert its genetic material into the host cell, 2) viral genetic material takes control of the host cell and uses it to produce viruses, 3) newly formed viruses are released from the host cell.</p> <p>B-LS.31: Compares and contrasts the stages of viral cycles to the cell cycle.</p> <p>B-LS.32: Explains the purpose of cell cycle checkpoints and identifies the three most important ones (i.e., G1, G2, and spindle assembly)</p> <p>B-LS.33: Identifies and explains some factors a cell assesses at G1 checkpoint (i.e., cell size, nutrients, molecular signals, DNA integrity)</p> <p>B-LS.34: Identifies and explains some factors a cell assesses at G2 checkpoint (i.e., DNA damage, DNA replication completeness).</p> <p>B-LS.35: Identifies and explains the factor a cell assesses at the spindle checkpoint (i.e., chromosome attachment to spindle at metaphase plate).</p> <p>B-LS.36: Evaluates the importance of each checkpoint in the cell cycle</p> <p>B-LS.45: Explains how cells differentiate in multicellular organisms.</p> <p>B-LS.54: Describes the primary function of nucleic acids (DNA and RNA) as storing the directions for cell activities and protein synthesis.</p> <p>B-LS.61: Defines stem cells as cells that can divide to different types of cells and explains why they are important.</p> <p>B-LS.62: Identifies the unique properties of all stem cells: capable of dividing and renewing themselves for long periods, unspecialized, can give rise to specialized cells.</p> <p>B-LS.63: Compares and contrasts embryonic and adult stem cells.</p> <p>B-LS.64: Explains the potential uses of human stem cells and obstacles in stem cell use</p> <p>B-LS.65: Predicts and describes the impact of stem cell research on the physiology of living organisms.</p> <p>B-LS.74: Defines genetics as the study of inheritance and a gene as the unit of heredity that is transferred from a parent to offspring and is held to determine some characteristic of the offspring.</p> <p>B-LS.75: Defines DNA as the fundamental substance of which genes are composed, containing the genetic instructions directing the biological development of all cellular forms of life, and many viruses.</p> |  |

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- B-LS.76: Explains that the information passed from parents to offspring is transmitted by means of genes which are coded in DNA molecules.
- B-LS.77: Draws and labels a homologous chromosome pair.
- B-LS.78: Uses a model to describe the structure of DNA, including hydrogen bonding, covalent bonding, nucleotide sequencing, and overall shape.
- B-LS.79: Explains the basic process of DNA replication and explains why it is considered semiconservative
- B-LS.80: Explains the results of the sorting and recombination of genes in sexual reproduction
- B-LS.81: Describes mechanisms that add to genetic variation (i.e., crossing over, jumping genes, deletion, duplication, and translocation)
- B-LS.82: Explains how mutations can alter genetic information and the possible consequences on resultant cells, citing examples of mutagens.
- B-LS.83: Defines mitosis as producing two genetically identical cells and meiosis as cell division consisting of two rounds of nuclear and cellular division which produce unique haploid cells.
- B-LS.84: Identifies and explains the process of mitosis (prophase, metaphase, anaphase, telophase)
- B-LS.85: Identifies and explains the process of meiosis (prophase, metaphase, anaphase, telophase), including stage I and stage II.
- B-LS.86: Explains the significance of forming haploid gametes through the process of meiosis.
- B-LS.87: Models the recombination of genetic information that results from meiosis
- B-LS.88: Explains how meiosis results in a variety of possible gene combinations.
- B-LS.89: Compares and contrasts the function of mitosis and meiosis
- B-LS.90: Compares and contrasts binary fission and mitosis
- B-LS.91: Illustrates that the sorting and recombining of genes in sexual reproduction results in a great variety of possible gene combinations in offspring.
- B-LS.92: Compares the genetic diversity of a population created by sexual reproduction with that of a population created by asexual reproduction.
- B-LS.93: Compares the advantages and disadvantages of sexual and asexual reproduction to survival of species.
- B-LS.94: Formulates, defends, and supports a perspective of a bioethical issue related to intentional or unintentional chromosomal mutations.
- B-LS.95: Explains the importance of DNA replication in cell reproduction.
- B-LS.96: Defines transcription (copying DNA into mRNA) and translation (translate the mRNA into an amino acid sequence).
- B-LS.97: Describes the basic process of transcription and translation how they result in gene expression.
- B-LS.98: Explains how cells pass on their genetic code by replication their DNA.
- B-LS.99: Differentiates among the end products of replication, transcription, and translation.
- B-LS.100: Summarizes how genetic information encoded in DNA provides instructions for assembling protein molecules (central Dogma).
- B-LS.101: Explains the genetic code as a sequence of DNA nucleotides in the nucleus of eukaryotic cells and nucleoid region of prokaryotes
- B-LS.102: Explains DNA as a polymer consisting of nucleotides which are identified by the base it contains: adenine (A), guanine (G), and cytosine (C) or thymine (T).

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- B-LS.103: Describes DNA as a double-stranded molecule in which the strands are connected by complementary nucleotide pairs (A-T and C-G) like rungs on a ladder which twist to form a double helix.
- B-LS.104: Describes RNA as a single-stranded polymer of nucleotides and the RNA nucleotide as identified by the base it contains adenine (A), guanine (G), and cytosine (C) or uracil (U).
- B-LS.105: Given a DNA sequence, writes a complementary mRNA strand (A-U, T-A, C-G, and G-C).
- B-LS.106: Explains how all cells in an organism have the same genetic content, but use different genes (protein, regulatory function, structural function, no known function) and the genes used by the cell may be regulated in different ways.
- B-LS.107: Uses empirical evidence to differentiate between cause and correlation in gene expression and make claims about the role of DNA and chromosomes in coding instruction for characteristics passed from parents to offspring and is universal
- B-LS.108: Identifies forensic identification as an example of the application of DNA technology
- B-LS.109: Explains the potential for the development of useful products through genetic engineering (e.g., human growth hormone, insulin, and pest- and disease resistant fruits and vegetables).
- B-LS.110: Explains why eugenics is considered a pseudo-science of selective procreation and how it demonstrated a misuse of the principles of heredity
- B-LS.111: Explains the efforts of the Human Genome Project and how the mapping of the entire gene sequence of organisms can be useful in the detection, prevention, and treatment of many genetic diseases.
- B-LS.112: Analyzes how identifying and altering genomes raises practical and ethical questions
- B-LS.113: Defines cloning as the production of genetically identical cells and/or organisms.
- B-LS.114: Debates genetic technologies that may improve the quality of life (e.g., genetic engineering, cloning, gene splicing).
- B-LS.115: Defines the law of segregation (allele pairs separate or segregate during gamete formation and randomly unite at fertilization)
- B-LS.116: Defines the law of independent assortment two or more characteristics are inherited, individual alleles assort independently during gamete production, giving different traits an equal opportunity of occurring together.
- B-LS.117: Describes Mendel's law of segregation and law of independent assortment role in genetic inheritance
- B-LS.118: Explains genotype as describing the genetic make-up of an organism and phenotype as describing the organism's physical expression of its genes.
- B-LS.119: Explains and demonstrates the use of a Punnett Square to be able to predict all possible combinations of gametes and the likelihood that particular combinations will occur in monohybrid crosses.
- B-LS.120: Explains dominant, recessive, and incomplete dominance genetic traits resulting when one allele masks the effect of another, that allele is called dominant and the other recessive and when intermediate phenotype occurs and no alleles dominates, incomplete dominance results.
- B-LS.121: Explains that homozygous individuals have two identical alleles for a particular trait, while heterozygous individuals have contrasting alleles.
- B-LS.122: Distinguishes among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, codominant, sex-linked polygenic, incomplete dominance, multiple alleles).
- B-LS.123: Interprets the results of a cross translating genotype into phenotype.
- B-LS.124: Explains how the processes of replication, transcription, and translation are similar in all organisms.

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B-LS.125: Analyzes how gene actions, patterns of heredity, and reproduction of cells and organisms account for the continuity of life.

B-LS.126: Relates Mendelian principles to modern-day practice of plant and animal breeding.

B-LS.127: Demonstrates the use of a Pedigree Chart to interpret patterns of inheritance within a family.

B-LS.128: Demonstrates how inherited characteristics can be observed at the molecular, cellular, and organism levels.

B-LS.144: Describes how mutations in sex cells and gene recombination may be passed on to successive generations and that the resulting phenotype may help, harm, or have little effect on the offspring's success.

Science as Inquiry

B-SI.13: Critically examines and discusses the validity of results reported in scientific literature and databases.

B-SI.14: Explains how competing scientific theories based on the same observations can be equally valid.

Technology Education

B-TE.4: Describe how X-ray photographs of DNA were used to describe the shape and dimensions of the molecule and how this analysis and other data led to a structural model for the DNA double helix.

B-TE.5: Describes how the double helix model explained how heredity information is transmitted and provided the basis for an explosion of scientific research in molecular genetics.

**Meaning**

**Enduring Understandings/Big Ideas**

*Students will understand that . . .*

- The central dogma of Biology is the basis for all inheritance and expression.
- Genetic traits follow specific patterns of inheritance.
- Efficient and effective reproduction is essential for the survival of all species.

**Essential Questions**

*Students will continue to consider. . .*

- How is structure related to function?
- What is life?
  - How are living things defined?
- Of what does life consist?
  - How do molecules interact to form life?

**Acquisition**

**Know (Content and Literacy) *Students will Know...***

- The similarities and differences between types of sexual and asexual reproduction (binary fission, mitosis, meiosis).
- The basic life cycle for prokaryotic and eukaryotic cells.
- The differences between unicellular and multicellular life cycles.
- The differences between the viral cycle and the cell cycle.
- How the structure of DNA codes for specific traits.

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| <ul style="list-style-type: none"><li>How genetic information is stored as DNA, transcribed into mRNA, and translated into protein to express traits (Central Dogma of Biology).</li></ul>                                                                                          |                                                                        |                                                                                        |                                                                                        |
| <b>Do (Discipline and Literacy Skills) <i>Students will be Skilled at...</i></b>                                                                                                                                                                                                    |                                                                        |                                                                                        |                                                                                        |
| <ul style="list-style-type: none"><li>Utilizing a Punnett square to determine the probability of specific genotypes and phenotypes.</li><li>Utilizing a pedigree to chart a genetic trait within a family.</li></ul>                                                                |                                                                        |                                                                                        |                                                                                        |
| <b>Vocabulary</b>                                                                                                                                                                                                                                                                   |                                                                        |                                                                                        |                                                                                        |
| <table><tr><td>Binary<br/>Fission<br/>Mitosis<br/>Meiosis<br/>Cell Cycle</td><td>DNA<br/>(Deoxyribonu<br/>cleic acid)<br/>Nucleotide<br/>Chromosome<br/>Gene</td><td>Punnett<br/>square<br/>Pedigree<br/>Genotype<br/>Phenotype<br/>Transcription<br/>Translation</td></tr></table> | Binary<br>Fission<br>Mitosis<br>Meiosis<br>Cell Cycle                  | DNA<br>(Deoxyribonu<br>cleic acid)<br>Nucleotide<br>Chromosome<br>Gene                 | Punnett<br>square<br>Pedigree<br>Genotype<br>Phenotype<br>Transcription<br>Translation |
| Binary<br>Fission<br>Mitosis<br>Meiosis<br>Cell Cycle                                                                                                                                                                                                                               | DNA<br>(Deoxyribonu<br>cleic acid)<br>Nucleotide<br>Chromosome<br>Gene | Punnett<br>square<br>Pedigree<br>Genotype<br>Phenotype<br>Transcription<br>Translation |                                                                                        |

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| Stage 2 – Assessment Evidence                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Evaluative Criteria<br>(Rubrics or Scoring Tool)                                                                                                           | Assessment Evidence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1. Observation <ul style="list-style-type: none"> <li>a. Look for and address misconceptions as the discussion progresses.</li> </ul>                      | <b>Initial/Pre-Assessment:</b> <ol style="list-style-type: none"> <li>1. Brain Dump and Discussion: Question 1: How do organisms get adaptations? (Connecting back to Unit 4) Question 2: What do we know about reproduction and genetics?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1. Standardized rubric for writing and content.                                                                                                            | <b>Performance Tasks:</b> <ol style="list-style-type: none"> <li>1. Designer Organism (Standard Performance Task #2)               <ul style="list-style-type: none"> <li>a. <b>Goal:</b> Design an organism to survive in Pandora, the world of Avatar.</li> <li>b. <b>Role:</b> Biologist</li> <li>c. <b>Audience:</b> Character designers for the new Avatar video game.</li> <li>d. <b>Situation:</b> Your task is to develop a report to present to the character designers about how the potential organism would fit the characteristics of life, pass-on their traits, and express them. The character designers are going to utilize your report to write the computer code to mimic how your organism lives and reproduces in the game.</li> <li>e. <b>Product:</b> Written report</li> <li>f. <b>Standards/Criteria for Success:</b> See rubric.</li> </ul> </li> </ol> |
| 1. Answer Key <ul style="list-style-type: none"> <li>a. Check for students' ability to correctly determine parent genotypes and gamete options.</li> </ul> | <b>Other Constructed Response Tasks:</b> <ol style="list-style-type: none"> <li>1. Finding Freddy's Father: Students will utilize given genetic information to determine paternity using Punnett squares as evidence.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| <div><div><div>b. Check for students' ability to correctly set up and complete a Punnett Square.</div><div>c. Check for students' ability to accurately interpret the results of a cross.</div><div>d. Check for students' ability to draw conclusions from a series of genetic information.</div></div><div><div>2. Answer Key</div><div><div>a. Check for students' ability to compare and contrast binary fission, mitosis, and meiosis.</div><div>b. Check student understanding of the pros and cons of sexual vs. asexual reproduction.</div><div>c. Check for students'</div></div></div></div> |                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <div>2. Cell Cycle and Division Quiz: Mixed question types at various DOK levels.</div> |

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| <div>ability to identify the stage of the cell cycle or division process of a specific specimen.</div> <div>d. Check student understanding of the importance of each part of the cell cycle and cell division process.</div> |                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                              | <b>Other Evidence:</b>                                                                                                                                                                                                                                                                                                                                                                            |
| <div>1. No scoring key needed. Informal observations and discussion in real time.</div> <div>2. Answer Key<div>a. Check for students' ability to correctly determine parent genotypes and gamete options.</div></div>        | <b>Formative Tasks/Evidence:</b> <div>1. Cell Division Comparison: Students utilize manipulatives to sort information about binary fission, mitosis, and meiosis. Once the student's have tried independently (or in pairs), the class will discuss their answers.</div> <div>2. Punnett Square Assessment: Students complete one Punnett square problem and analyze the results in 4 ways.</div> |

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| <div><div><div>b. Check for students' ability to correctly set up and complete a Punnett Square.</div><div>c. Check for students' ability to accurately interpret the results of a cross.</div></div><div>3. Are students grasping the concepts? Are they presenting any misconceptions?</div></div> | <div>3. Other Formative Tasks include warm-ups, class discussions, and observations.</div> |
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| Stage 3 – Learning Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |
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| Unit Texts and Resources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |
| <ul style="list-style-type: none"> <li>Holt Biology: All of Chapters 5-9</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |
| Lessons and Activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Progress Monitoring                                                                                                                                   | Scaffolding/Supports                                                                                                                                                                                                                                                                                                  |
| <p><u>Pre-Assessment:</u> Brain dump and discussion.<br/>Question 1: How do organisms get adaptations? (Connecting back to Unit 4)<br/>Question 2: What do we know about reproduction and genetics?</p> <p><b>Notes:</b> Viral cycle vs. Cell cycle<br/>-Comparison of viral and cell cycles.<br/>-Steps and checkpoints of the cell cycle.<br/>-Cancer and its relationship to the cell cycle.</p> <p><b>Notes:</b> Structure and condensation of DNA<br/>-Double helix arrangement of nucleotides.<br/>-Base-pairing rules and complementary strands.<br/>-Condensation into chromatin and chromosomes.</p> <p><b>Notes AND Modeling:</b> DNA Replication<br/>-Where and when it occurs.<br/>-Enzymes involved.<br/>-Leading vs. Lagging strand<br/>-Semi-conservative.</p> | <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Notes:</b> Solidify expected knowledge.</p> | <p><u>Pre-Assessment:</u> No scaffolding.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> |

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| <p><b>Notes:</b> Cell Division<br/>-Sexual vs. Asexual Reproduction.<br/>-Mitosis<br/>-Binary Fission</p> <p><b>Activity:</b> Modeling Mitosis<br/>-Using manipulatives and written descriptions of each phase.<br/>-Reflection questions to express the importance of each phase and clarify differences.</p> <p><b>Notes:</b> Cell Division Continued<br/>-Meiosis</p> <p><b>Formative Assessment:</b> Comparison between binary fission, mitosis, and meiosis. Students try first using manipulatives then discuss together as a class.</p> <p><b>Notes:</b> Cell Division: Continued<br/>-Clarify diploid and haploid<br/>-Meiosis before sexual reproduction<br/>-Cytokinesis<br/>-Spermatogenesis vs. Oogenesis<br/>-Fertilization and differentiation</p> <p><b>Quiz:</b> Cell cycle and division (See assessments above)</p> | <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Activity:</b> Check students' understanding of what is moving and changing between the phases of mitosis.</p> <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Formative Assessment:</b> Quick check of understanding.</p> <p><b>Notes:</b> Solidify expected knowledge.</p> | <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Activity:</b> Students will be provided with the previous notes transcripts as needed and reminded of the key for the modeling pieces.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Formative Assessment:</b> None. All students will be provided with manipulatives for their initial try.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Quiz:</b> Specific modifications provided as needed. Including the following: reduced choices, extended time, modified open-ended, chunking,</p> |
| <p><b>Assessment:</b> Finding Freddy's Father<br/>-Introduction and Hypothesis</p> <p><b>Notes:</b> Mendelian Genetics<br/>-Mendel's Laws<br/>-Introduce vocabulary (genome,</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>Assessment:</b> None</p> <p><b>Notes:</b> Solidify expected knowledge.</p>                                                                                                                                                                                                                                                            | <p><b>Assessment:</b> None</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| <p>chromosome, gene allele, genotype, dominant, recessive, homozygous, heterozygous, carrier, phenotype)<br/>-Punnett square basics<br/>-Probability vs. percent chance<br/>-Test cross</p> <p><b><u>Formative Assessment:</u></b> Students complete one Punnett square problem and analyze the results in 4 ways.</p> <p><b><u>Assessment:</u></b> Finding Freddy's Father<br/>-Part 1: Mendelian traits only</p> <p><b><u>Notes:</u></b> Complex Genetics<br/>-Codominance vs. Incomplete dominance<br/>-Blood type<br/>-Sex-linked traits<br/>-Revisit carriers<br/>-Multiple alleles<br/>-Polygenic traits<br/>-Epistasis</p> <p><b><u>Assessment:</u></b> Finding Freddy's Father<br/>-Part 2: Complex genetics</p> | <p><b><u>Formative Assessment:</u></b> Used to check students' understanding of how to complete and interpret a Punnett square.</p> <p><b><u>Assessment:</u></b> First attempt for completion. Pull examples of mistakes to review and correct together as a class. Second attempt for accuracy.</p> <p><b><u>Notes:</u></b> Solidify expected knowledge.</p> <p><b><u>Assessment:</u></b> First attempt for completion. Pull examples of mistakes to review and correct together as a class. Second attempt for accuracy.</p> | <p><b><u>Formative Assessment:</u></b> None</p> <p><b><u>Assessment:</u></b> The following modifications will be provided as needed: chunking, reduced problems (first problem for each trait completed for them as an example), choice options for genotypes and phenotypes.</p> <p><b><u>Notes:</u></b> Guided notes and notes transcripts provided to students as needed.</p> <p><b><u>Assessment:</u></b> The following modifications will be provided as needed: chunking, reduced problems (first problem for each trait completed for them as an example), choice options for genotypes and phenotypes.</p> |
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| <p><b>Notes:</b> Pedigrees</p> <ul style="list-style-type: none"> <li>-Interpreting pedigrees with a known trait</li> <li>-Drawing pedigrees from familial history</li> <li>-Determining type of inheritance pattern based on a pedigree</li> </ul> <p><b>Activity:</b> Pedigree Practice</p> <ul style="list-style-type: none"> <li>-Student interpret and design pedigrees</li> </ul>                    | <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Activity:</b> First attempt for completion. Pull examples of mistakes to review and correct together as a class. Second attempt for accuracy.</p>       | <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Activity:</b> Modifications provided as needed. Modifications can include: chunking, base structures for drawing pedigrees, chunking and abbreviation of familial histories.</p>                                                                                                                                                  |
| <p><b>Notes and Modeling:</b> Central Dogma of Biology</p> <ul style="list-style-type: none"> <li>-Transcription</li> <li>-Translation</li> </ul> <p><b>Notes:</b> Mutations</p> <ul style="list-style-type: none"> <li>-Chromosomal (deletion, duplication, translocation, inversion)</li> <li>-Gene (point mutation/substitution: silent, nonsense, missense, frameshift: insertion/deletion)</li> </ul> | <p><b>Notes:</b> Solidify expected knowledge.</p> <p><b>Notes:</b> Solidify expected knowledge.</p>                                                                                                             | <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p> <p><b>Notes:</b> Guided notes and notes transcripts provided to students as needed.</p>                                                                                                                                                                                                                                                 |
| <p><b>Performance Task #2:</b> Designer Organism (See assessment section above)</p>                                                                                                                                                                                                                                                                                                                        | <p><b>Performance Task #2:</b> Summative evaluation of depth of knowledge concerning relationship, structure, and function of macromolecules and cells. Summative evaluation of informative writing skills.</p> | <p><b>Performance Task #2:</b></p> <p><u>All:</u> Planning sheets to organize the writing process.</p> <p><u>Modifications:</u> Students are not required to include all organelles in their writing. Students must include the following (nucleus, chloroplast and/or mitochondria, ribosome, cell membrane)</p> <p><u>Accommodations:</u> One-on-one or small group guidance through the development and writing process.</p> |
| <p><b>One-Pager</b></p> <ul style="list-style-type: none"> <li>-Students will organize the information from the unit into a</li> </ul>                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                 | <p><b>One-Pager:</b> If needed, separate study materials will be provided for them. They will work with their</p>                                                                                                                                                                                                                                                                                                               |

UNIT 5: REPRODUCTION IS THE GOAL

**Teacher Name:** Rebecca Cottington  
**Grade/Course:** Biology  
**Dates of Unit:** ~6 weeks

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| <p>one-page study tool that emphasizes the major topics, visuals, vocabulary etc.</p> <p><b>Summative Exam:</b> Unit 5 exam.</p> | <p><b>Summative Exam:</b> Summative evaluation to identify long-term remediation needs.</p> | <p>support teacher separately to study for the exam.</p> <p><b>Summative Exam:</b><br/><u>Accomodations:</u> Testing in a small group with a support teacher the first period and a content teacher the second period. Extended time past 100% provided if needed outside of regular class time.<br/><u>Modifications:</u> Limited choices for multiple choice and matching, written reading supports, fewer constructed response, constructed response modified into multiple choice, fill in the blank, matching, or broken into smaller questions.</p> |
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