



# Gulfport School District PACING GUIDE

## GENETICS

Content Strands: Inquiry (I), Life Sciences (L)		
QTR	Competency/Objective	
<b>Apply inquiry-based and problem-solving processes and skills to scientific investigations. (I)</b>		
1.1 to 1.2	1a	Use current technologies such as CD-ROM, DVD, Internet, and on-line data search to explore current research related to a specific topic. (DOK 3)
1.1 to 1.2	1b	Clarify research questions and design laboratory investigations. (DOK 3)
1.1 to 1.2	1c	Demonstrate the use of scientific inquiry and methods to formulate, conduct, and evaluate laboratory investigations (e.g., hypotheses, experimental design, observations, data analyses, interpretations, theory development). (DOK 3)
1.1 to 1.2	1d	Organize data to construct graphs (e.g., plotting points, labeling x-and y-axis, creating appropriate titles and legends for circle, bar, and line graphs) draw conclusions and make inferences. (DOK 3)
1.1 to 1.2	1e	Evaluate procedures, data, and conclusions to critique the scientific validity of research. (DOK 3)
1.1 to 1.2	1f	Formulate and revise scientific explanations and models using logic and evidence (data analysis). (DOK 3)
1.1 to 1.2	1g	Collect, analyze, and draw conclusions from data to create a formal presentation using available technology (e.g., computers, calculators, SmartBoard, CBL's, etc.) (DOK 3)
<b>Analyze the structure and function of the cell and cellular organelles. (L)</b>		
1.1	2a	Cite evidence to illustrate how the structure and function of cells are involved in the maintenance of life. (DOK 2)
1.1	2b	Describe how organic components are integral to biochemical processes. (DOK 2)
1.1	2c	Differentiate among the processes by which plants and animals reproduce. (DOK 1) <ul style="list-style-type: none"> <li>• Cell cycle and mitosis</li> <li>• Meiosis, spermatogenesis, and oogenesis</li> </ul>
1.1	2d	Explain the significance of the discovery of nucleic acids. (DOK 1)
1.2	2e	Analyze and explain the structure and function of DNA and RNA in replication, transcription, translation and DNA repair. (DOK 2)
1.2	2f	Cite examples to compare the consequences of the different types of mutations. (DOK 1)
1.2	2g	Draw conclusions about the importance and potential impacts of the process of gene transfer used in biotechnology. (DOK 3)
<b>Apply the principles of heredity to demonstrate genetic understandings. (L)</b>		
1.1	3a	Cite evidence that supports the significance of Mendel's concept of "particulate inheritance" to explain the understanding of heredity. (DOK 1)



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<b>Apply the principles of heredity to demonstrate genetic understandings. (L)</b>	
1.1	3b Apply classical genetics principles to solve basic genetic problems. (DOK 2) <ul style="list-style-type: none"> <li>• Genes and alleles, dominance, recessiveness, the laws of segregation, and independent assortment</li> <li>• Inheritance of autosomal and sex-linked traits               <ul style="list-style-type: none"> <li>• Inheritance of traits influenced by multiple alleles and traits with polygenetic inheritance</li> <li>• Chromosomal theory of inheritance</li> </ul> </li> </ul>
1.2	3c Apply population genetic concepts to summarize variability of multicellular organisms. (DOK 2) <ul style="list-style-type: none"> <li>• Genetic variability</li> <li>• Hardy-Weinberg formula</li> <li>• Migration and genetic drift</li> <li>• Natural selection in humans</li> </ul>
1.2	3d Distinguish and explain the applications of various tools and techniques used in DNA manipulation. (DOK 1) <ul style="list-style-type: none"> <li>• Steps in genetic engineering experiments</li> <li>• Use of restriction enzymes</li> <li>• Role of vectors in genetic research</li> <li>• Use of transformation techniques</li> </ul>
1.1 to 1.2	3e Research and present a justifiable explanation the practical uses of biotechnology (e.g., chromosome mapping, karyotyping, pedigrees). (DOK 2)
1.1	3f Develop and present a scientifically-based logical argument for or against moral and ethical issues related to genetic engineering. (DOK 3)
1.2	3g Research genomics (human and other organisms) and predict benefits and medical advances that may result from the use of genome projects. (DOK 2)