Southern Research STEM Education Outreach
Middle School Field Trip Experiences
2025 Alabama Course of Study Alignment

	Pharmacogenetics	Infectious Diseases	Genetics
	Life Science Standards		
4. Obtain, evaluate, and communicate information explaining how cells, tissues, and organs of various systems of the human body work together for specific functions, including the circulatory, digestive, muscular, nervous, respiratory, and skeletal systems. ***Examples: responding to stimuli, moving, breaking down, or transporting nutrients***	✓	✓	✓
11. Develop and use models to demonstrate how genetic variations between parents and offspring result from differences in inherited genes located on chromosomes. ***Examples: monohybrid crosses using Punnett squares, homozygous and heterozygous allele pairs, phenotypes and genotypes, variants***			✓
12. Develop and use models to explain how genes are expressed through the flow of genetic information from DNA to RNA to a functional protein.	✓		✓
13b. Construct an explanation from evidence of how genetic variants may result in harmful, beneficial, or neutral effects on the structure and function of an organism.	✓		✓
14. Obtain, evaluate, and communicate information on the use of technologies that impact the inheritance and appearance of traits in organisms. ***Examples: genetic engineering, gene therapy, selective breeding, genetically modified organisms***	✓		✓

	Science and Engineering Practices		
Asking Questions and Defining Problems	✓	✓	✓
Developing and Using Models	✓		
Planning and Carrying Out Investigations	✓	✓	✓
Analyzing and Interpreting Data	✓	✓	✓
Using Mathematics and Computational Thinking			
Constructing Explanations and Designing Solutions		✓	✓
Engaging in Argument from Evidence			
Obtaining, Evaluating, and Communicating Information	✓		
	Cross-Cutting Concepts		
Patterns	✓	✓	✓
Cause and Effect	✓	✓	✓
Scale, Proportion, and Quantity		✓	
Systems and System Models		✓	
Energy and Matter			
Structure and Function	✓	✓	✓
Stability and Change	✓		

	Molecules in Medicine
	Physical Science Standards
6. Observe and analyze data regarding characteristic properties of substances before and after they are combined to determine whether a chemical reaction has occurred.	✓
8. Engage in an argument from evidence to support the claim that matter is conserved in a chemical reaction.	✓
8a. Use a model to verify that atoms of reactants are conserved as products in a chemical reaction.	✓
	Science and Engineering Practices
Asking Questions and Defining Problems	
Developing and Using Models	✓
Planning and Carrying Out Investigations	✓
Analyzing and Interpreting Data	✓
Using Mathematics and Computational Thinking	
Constructing Explanations and Designing Solutions	✓
Engaging in Argument from Evidence	✓
Obtaining, Evaluating, and Communicating Information	
	Cross-Cutting Concepts
Patterns	
Cause and Effect	
Scale, Proportion, and Quantity	
Systems and System Models	

Energy and Matter	✓
Structure and Function	
Stability and Change	✓