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

	Foundations of Cancer	Infectious Diseases	Antibiotic Resistance
	Human Anatomy & Physiology Standards		
7. Obtain, evaluate, and communicate information describing the structure of lymph nodes and primary cells of the immune system (neutrophils, lymphocytes, monocytes, macrophages, eosinophils, and basophils) and explaining their role in inflammation and the body's defense.		✓	
7a. Obtain, evaluate, and communicate information explaining how vaccines work to stimulate immunity in the human body.		✓	
	Biology Standards		
2. Obtain and evaluate information to explain the role of DNA and RNA in transcription and translation leading to protein synthesis and cellular function	✓	✓	✓
2c. Obtain, evaluate, and communicate information regarding how DNA and genetic technology applies to daily life.	✓	✓	✓
3. Develop and use models to explain how events during the cell cycle lead to the formation of new cells and repair of multicellular organisms, including cell growth, DNA replication, separation of chromosomes, and separation of cell contents.	✓		
3b. Using observations of cell growth, construct an explanation of how the cell cycle leads to differentiation in tissue development.	✓		
11. Use probability and statistical models to explain the variation of expressed traits within a population.	✓		
11a. **Use mathematics and computational thinking** to **predict patterns of inheritance, including dominance, recessiveness, codominance, and**	✓		

incomplete dominance.			
11b. Obtain, evaluate, and communicate information about how the interplay of heritable risk factors, somatic mutations, and environment influences human disease.	✓		
13a. Evaluate evidence supporting claims that viruses should be placed in a separate category from living things.		✓	✓
14. Analyze and interpret data pertaining to adaptations resulting from natural and artificial selection to explain the evolution of populations.			✓
	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	✓		

	Precision Medicine	Cystic Fibrosis	A Taste of Genetics
	Human Anatomy & Physiology Standards		
7. Obtain, evaluate, and communicate information describing the structure of lymph nodes and primary cells of the immune system (neutrophils, lymphocytes, monocytes, macrophages, eosinophils, and basophils) and explaining their role in inflammation and the body's defense.			
7a. Obtain, evaluate, and communicate information explaining how vaccines work to stimulate immunity in the human body.			
	Biology Standards		
2. Obtain and evaluate information to explain the role of DNA and RNA in transcription and translation leading to protein synthesis and cellular function		✓	✓
2c. Obtain, evaluate, and communicate information regarding how DNA and genetic technology applies to daily life.	✓	✓	✓
3. Develop and use models to explain how events during the cell cycle lead to the formation of new cells and repair of multicellular organisms, including cell growth, DNA replication, separation of chromosomes, and separation of cell contents.			
3b. Using observations of cell growth, construct an explanation of how the cell cycle leads to differentiation in tissue development.			
11. Use probability and statistical models to explain the variation of expressed traits within a population.	✓		
11a. Use mathematics and computational thinking to predict patterns of inheritance, including dominance, recessiveness, codominance, and incomplete dominance.		✓	✓
11b. Obtain, evaluate, and communicate information about how the interplay of	✓	✓	✓

heritable risk factors, somatic mutations, and environment influences human disease.			
13a. Evaluate evidence supporting claims that viruses should be placed in a separate category from living things.			
14. Analyze and interpret data pertaining to adaptations resulting from natural and artificial selection to explain the evolution of populations.			
	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			

	The Science of Drug Development
	Chemistry Standards
5. Obtain, evaluate, and communicate information concerning factors that affect solubility and the properties of solutions.	✓
5b. Develop and use models to illustrate solute-solvent interactions.	✓
5d. Analyze and interpret data to explain the effects of temperature on the solubility of solid, liquid, and gaseous solutes in a solvent and the effects of pressure on the solubility of gaseous solutes.	✓
5e. Design and conduct experiments to evaluate the effect of solute concentration on the colligative properties of a solution.	✓
	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	