366823

DNA Fingerprinting Electrophoresis Lab Activity

Aligned with All Published National Standards

ward's science

IMGN 250 8030

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* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices

X	Asking questions (for science) and defining problems (for engineering)		Use mathematics and computational thinking
	Developing and using models	X	Constructing explanations (for science) and designing solutions (for engineering)
X	Planning and carrying out investigations	X	Engaging in argument from evidence
X	Analyzing and interpreting data	X	Obtaining, evaluating, and communicating information

DIMENSION 2 Cross Cutting Concepts

X	Patterns		Energy and matter: Flows, cycles, and conservation
	Cause and effect: Mechanism and explanation	X	Structure and function
X	Scale, proportion, and quantity		Stability and change
	Systems and system models		

DIMENSION 3 Core Concepts

Discipline	Core Idea Focus
Life Science	LS1: From Molecules to Organisms: Structures and Properties
	LS3: Heredity: Inheritance and Variations of Traits

X Indicates standards covered in activity

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Middle School Standards Covered	High School Standards Covered
MS.LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	HS.LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
	HS.LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

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standards/learning objectives

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Content Standards (K-12)			
X	Systems, order, and organization		Evolution and equilibrium
X	Evidence, models, and explanation	X	Form and Function
X	Constancy, change, and measurement		

Life Science Standards Middle School		Life Science Standards High School	
X	Structure and Function in Living Systems	X	The Cell
X	Reproduction and Heredity	X	Molecular Basis of Heredity
X	Diversity and Adaptations of Oranisms		

X Indicates standards covered in activity

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1A: The Scientific World View
3. The Nature of Technology	3A: Technology and Science
5. The Living Environment	5A: Diversity of Life
	5B: Heredity
	5C: Cells
6. The Human Organism	6A: Human Identity
11.Common Themes	11A: Systems
	11B: Models

activity objectives:

- Learn the process of agarose gel electrophoresis
- Perform the electrophoresis procedure
- Identify the guilty suspect in a criminal investigation
- Determine the size of unknown DNA molecules

time requirement:

- Casting gels and diluting buffer: 30 minutes
- Loading and running gel: 3 hours
- Staining and analyzing gel: 60 minutes