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DNA Detectives Lab Activity

Aligned With All Published National Standards

ward's science

IMGN 250 8023

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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
	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 Processes
	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.LS3-2: Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	HS.LS1-1: Construct an explanation based on evidence on how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized 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.

(continued on next page)

standards/learning objectives

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Content Standards (K-12)			
X	Systems, order, and organization	X	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 System	X	The Cell
X	Reproduction and Heredity	X	Molecular Basis of Heredity
X	Diversity and Adaptations of Organisms		

X Indicates standards covered in activity

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
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

activity objectives:

- Assume the role of a forensic scientist in an attempt to solve a violent crime using DNA evidence.
- Perform the process of restriction enzyme digestion of DNA.
- Employ agarose electrophoresis to separate the digested DNA fragments.
- Identify the guilty suspect based on the DNA fingerprinting evidence.
- Understand the principles and practices of DNA technology as applied to the forensic sciences.

time requirement:

Part I: 90 minutes
Part II: 120 minutes