366819

# Ward's Paternity Testing Lab Activity

Aligned with All Published National Standards

ward's science

IMGN 250 8026

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IMGN 250 8026 - v. 6/13

# framework for K-12 science education © 2012

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

**DIMENSION 1** Science and Engineering Practices

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

**DIMENSION 2** Cross Cutting Concepts

| | | | |
|---|---|---|---|
| × | Patterns | | Energy and matter: Flows, cycles, and conservation |
| × | Cause and effect: Mechanism and explanation | × | 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 Properties |
| | LS3: Heredity: Inheritance and Variation of Traits |

× Indicates standards covered in activity

# next generation science standards © 2013

| 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. |

*(continued on next page)*

# standards/learning objectives

## national science education standards © 1996

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

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

× 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 |
| | 11B: Models |

## activity objectives:

- Learn the process of agarose gel electrophoresis
- Perform the electrophoresis procedure
- Identify the most probable DNA match between two alleged fathers

## time requirement:

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