

853981

# Gram Staining and Bacterial Morphology Lab Activity

Aligned with All Published National Standards

**ward's**  
**science+**

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# framework for K-12 science education © 2012

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

<b>DIMENSION 1</b> 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
<b>DIMENSION 2</b> 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		
<b>DIMENSION 3</b> Core Concepts	Discipline		Core Idea Focus	
	Life Science		LS1: From Molecules to Organisms: Structures and Properties	

## next generation science standards © 2013

<b>NGSS STANDARDS</b>	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.LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

## 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 System	×	The Cell

× Indicates standards covered in activity

# learning objectives

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## benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
5. The Living Environment	5C: Cells
11. Common Themes	11A: Systems

### activity objectives:

- Understand the physical and chemical differences between Gram-positive and Gram-negative bacteria.
- Demonstrate competency in carrying out the Gram stain procedures.
- Examine each bacterial sample and identify whether they are Gram-positive or Gram-negative.

### time requirement:

60 minutes