

About this Issue

The article "[New 'rules' for finding antibiotics](#)" (12.4 readability score) proposes a new strategy for designing antibiotics for gram-negative bacteria. Students can focus on details reported in the article, follow connections to earlier articles about drug-resistant bacteria and antibiotics, and explore cross-curricular connections to other major science topics. In a related activity, students can test how susceptible yogurt bacteria are to antibiotics and determine whether the bacteria are gram-positive or gram-negative. *Science News for Students* provides another version of this article written at a lower Lexile level (8.3 readability score): "[New 'rules' for finding antibiotics.](#)" [Power Words](#) are defined at the end of the *Science News for Students* article.

Connections to Curricula:

- Prokaryotes/bacteria
- Antibiotics
- Antibiotic resistance
- Biotechnology
- Microscopy
- Genetics
- Pharmacology
- Epidemiology
- Macromolecules

Want to read more about drug-resistant bacteria? Check out "[Scientists watch germs evolve into super bugs](#)" (7.6 readability score), from *Science News for Students*.

Looking for antibiotic resistance research conducted by students? Check out "[Teen studies how germs resist our drugs](#)" (8.5 readability score), from *Science News for Students*.

What's in this Guide?

Article-Based Observation: These questions focus on reading and content comprehension by drawing on information found in the article "[New 'rules' for finding antibiotics.](#)" Questions focus on student understanding of gram-negative bacteria and the bacteria's response to antibiotics.

Quest Through the Archives: With Internet access and your school's digital access to *Science News*, your students can use this short section to explore other articles about bacteria and antibiotic development as reported by *Science News* since 1924.

Cross-Curricular Discussion: These questions and extension prompts connect to the article "[New 'rules' for finding antibiotics](#)" and encourage students to think in more detail about scientific areas related to the article. The section is divided roughly by science subdiscipline for educators who would like to focus on one particular topic area. The extension prompts are either more topic-specific or more conceptually advanced. **Biological and Chemical Sciences** questions range from the nature of bacteria to types of antibiotics. **Engineering and Experimental Design** questions focus on methods of dealing with antibiotic resistance and useful applications of bacteria.

Activity: Students can culture yogurt bacteria with and without antibiotics to test the bacteria's sensitivity. Students can also stain microscope slides of yogurt bacteria to determine if they are gram-positive or gram-negative. After completing this activity, students will better understand how yogurt is made by bacterial fermentation and how antibiotics can affect this process.

Standards Alignment

Next Generation Science	Common Core
Matter and Its Interactions: HS-PS-1-5 , HS-PS-1-6	ELA Standards: Reading Informational Text (RI): 1, 2, 4, 5, 7
From Molecules to Organisms: Structures and Processes: HS-LS1-1 , HS-LS1-2 , HS-LS1-3 , HS-LS1-6 , HS-LS1-7	ELA Standards: Writing (W): 1, 2, 3, 4, 6, 7, 8, 9
Heredity: Inheritance and Variation of Traits: HS-LS3-1 , HS-LS3-2	ELA Standards: Speaking and Listening (SL): 1, 2, 4, 6
Biological Evolution: Unity and Diversity: HS-LS-4-2 , HS-LS-4-3 , HS-LS-4-4	ELA Standards: Reading for Literacy in Science and Technical Subjects (RST): 1, 2, 3, 4, 5, 7, 8, 9
Engineering Design: HS-ETS1-1 , HS-ETS1-2	ELA Standards: Writing Literacy in History/Social Studies and Science and Technical Subjects (WHST): 1, 2, 4, 6, 7, 8, 9