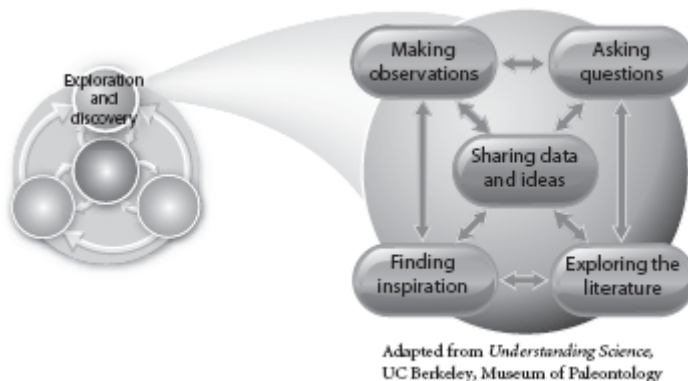


Exploration and Discovery: Where Ideas Come From

1. Describe how new ideas are generated.

2. How are science and technology related?

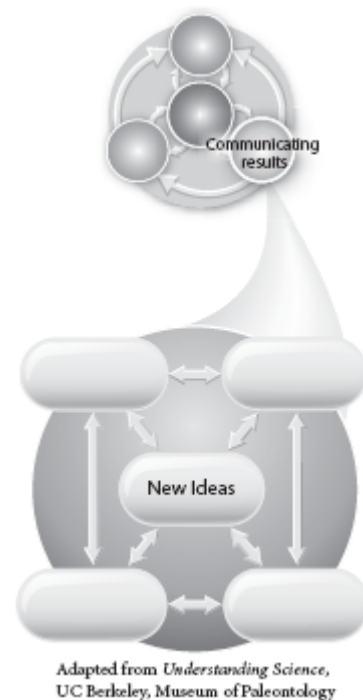
3. It took hundreds of years of discussion and the experiments of Louis Pasteur in the nineteenth century for the larger scientific community to accept that spontaneous generation of life was not a valid scientific concept. Referring to the diagram, describe how modern methods of communication have changed the scientific process.



Communicating Results: Reviewing and Sharing Ideas

4. **THINK VISUALLY** Use lesson concepts to complete the diagram to show the outcome of communication among scientists. Why are "New Ideas" placed at the center of the diagram?

5. Of the four types of communication you added, identify the one that is critical to ensuring communication among the scientific community.



Scientific Theories

6. A typical dictionary will have different definitions for the word *theory*. It will include a definition that describes how scientists use the term, but it will also define *theory* as speculation, or an assumption, or a belief. Are these common definitions of *theory* synonyms (words similar in meaning) or antonyms (words opposite in meaning) to the definition of a scientific theory? Explain your thinking.

For Questions 7–11, identify whether each statement is a hypothesis or a theory. For a hypothesis, write an “H” on the line. For a theory, write a “T.”

- _____ 7. The rate that grass grows is related to the amount of light it receives.
- _____ 8. All life is related and descended from a common ancestor.
- _____ 9. The universe began about 15 billion years ago.
- _____ 10. New tennis balls bounce higher than old tennis balls.
- _____ 11. Caffeine raises blood pressure.

Science and Society

12. How can bias affect the application of science in society? What role does a good understanding of science play in this phenomenon?

Apply the Big idea

13. What is it about science, as a way of knowing, that makes it self-correcting?
