Guided Research

Studying Limb Regeneration

In the beginning of this lesson, a planarian was shown cut in half and then regenerating its body. Regeneration is the regrowth of a lost body part. This is common in some complex organisms, but as organisms become more complex, the ability to regenerate body parts becomes more rare. For example, humans do not have the ability to regenerate lost body parts. However, scientists think that by studying species that can regenerate and applying this knowledge to humans, we may someday be able to regrow lost limbs.

One species currently being studied is the Mexican axolotl, a type of salamander. This species is unusual in its ability to regenerate multiple structures such as limbs, skin, jaws, and even its spinal cord. In addition, the axolotl is incredibly resistant to developing cancer and it remains in its juvenile form for its entire life. As a result, this species is the focus of several scientific studies on limb regeneration and possible treatments for human diseases.

Perform your own research to find out how scientists are approaching this problem. Use the following questions to guide your research.

- What types of questions are scientists asking about limb regeneration?
- How are these questions being investigated?
- What types of advances are scientists hoping to make?
- What have scientists been able to achieve so far?
- What controversies has this type of research caused?
- How might this research be used to benefit humans?

As you conduct your research, evaluate your sources carefully to be sure they are reliable. Do they present verifiable facts? Are the opinions those of an expert or experts in this field? Is there enough evidence to show that reported successes are viable?

FIGURE 16: Salamanders such as this axolotl (*Ambystoma mexicanum*) can regenerate lost limbs.

Language Arts Connection

Make a webpage or blog to explain the latest advancements in limb regeneration. You may choose to focus on a specific species or line of research. Use audio, visual, and interactive elements to add interest and make the concepts you are explaining easy to understand. Include a list of sources in the format specified by your instructor.

A multimedia presentation combines text, sounds, and images. A successful multimedia presentation includes the following:

- clear and consistent focus
- ideas that are presented clearly and logically
- graphics, text, music, video, and sounds that support key points
- organization that is appropriate to its purpose and audience

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