Genetic Mutation

Life Science | Lesson Guide

2nd Grade

Photo Description

This image shows a bright pink flower with yellow stamens (the middle part) in a sunny garden. You can see that this flower looks a little different from other flowers around it—it has more petals and a fuller center than typical flowers of this type. The flower is surrounded by green leaves and other smaller flowers blooming nearby.

Scientific Phenomena

Anchoring Phenomenon: This flower displays natural variation—differences in how living things look and grow, even when they are the same type of plant.

Why It Happens: Plants grow from seeds that carry instructions (genes) from their parent plants. Sometimes, these instructions get mixed up or change slightly, creating plants that look a little different. This flower might have extra petals because of a change in its genetic instructions, a mutation. This is a natural part of how life works—no two living things are exactly alike, even in the same family or garden.

Core Science Concepts

* Variation in Living Things: All plants and animals of the same type have small differences. Some flowers have more petals, some are darker or lighter, and some are bigger or smaller.

* Traits and Inherited Characteristics: The way a plant looks (its traits) comes partly from what it inherited from its parent plants and partly from where it grows.

* Observation and Description: Scientists notice small details about living things by looking carefully and describing what they see using their senses.

* Structures and Functions: Flower petals help attract insects, and the stamens (yellow center) make pollen that helps create new plants.

Pedagogical Tip:

Rather than using the term "genetic mutation" directly with second graders, frame this as "special changes" or "surprise differences" in how flowers grow. Use the familiar language of families: "Just like you might have curly hair but your sister has straight hair, flowers can be different too—even from the same plant!" This connects to their lived experience while building foundational understanding for later genetics study.

UDL Suggestions:

To support all learners: (1) Representation: Provide close-up photos and real flowers for students to examine. Some students may benefit from hand lenses to observe details. (2) Action & Expression: Allow students to draw the flower, create it with craft materials, or sort picture cards of different flowers by similarities and differences. (3) Engagement: Invite students to find "special" or "different-looking" flowers on a nature walk, making observation personally meaningful.

Discussion Questions

1. Why do you think this flower looks different from the other flowers in the garden? (Bloom's: Infer | DOK: 2)

2. If you planted a seed from this special flower, what do you think the new plant might look like? (Bloom's: Predict | DOK: 2)

3. How is this pink flower the same as other flowers you've seen, and how is it different? (Bloom's: Compare/Contrast | DOK: 2)

4. What do you think the yellow bumpy part in the middle of the flower does? (Bloom's: Evaluate | DOK: 3)

Extension Activities

Activity 1: Flower Hunt and Sketch
Take students on a nature walk to find different types of flowers. Have them choose one flower to sketch and label. Back in the classroom, compare drawings and discuss: "What makes each flower special? How are they the same? How are they different?" This builds observational skills and honors variation.

Activity 2: Flower Trait Sorting Game
Collect pictures of various flowers (or create simple drawings). Give students cards with traits written or drawn on them (pink/red/yellow, many petals/few petals, big/small). Have students sort flowers into groups by different traits. Repeat with different sorting rules to show that the same flowers can be grouped in many ways.

Activity 3: Design Your Own Flower
Provide students with colored paper, tissue paper, and craft supplies. Ask them to create their own "special flower" that has a trait they choose (extra petals, unusual colors, different shapes). Display creations and have students explain what makes their flower unique, using new vocabulary.

NGSS Connections

Performance Expectation: 2-LS2-1 Plan and conduct investigations to provide evidence that plants get the materials they need for growth chiefly from air and water.

Disciplinary Core Ideas:
- 2-LS2.A Students observe that plants need water, sunlight, and air to grow
- 2-LS4.A Students recognize that organisms have different traits and that organisms are similar to their parents but not exactly the same

Crosscutting Concepts:
- Patterns Flowers show patterns in their structure; we can observe patterns in how they vary
- Cause and Effect Changes in a plant's genes can cause it to look different from other plants of the same type

Science Vocabulary

* Petals: The colorful parts of a flower that are soft and pretty. Petals help bees and other insects notice the flower.

* Stamens: The tiny yellow bumpy parts in the very center of the flower that make a dust called pollen.

* Trait: A special thing about how a living thing looks or acts, like being tall, having curly hair, or having pink petals.

* Variation: Small differences between living things of the same type, even though they are related or from the same family.

* Mutation: A surprise change in how a plant or animal looks because something changed in the instructions that tell it how to grow.

External Resources

Children's Books:
- Planting a Rainbow by Lois Ehlert (explores flower variety and color)
- The Tiny Seed by Eric Carle (shows plant growth and natural variation)
- From Seed to Plant by Gail Gibbons (simple, clear illustrations of plant life cycles)

YouTube Videos:
- "How Flowers Grow" by National Geographic Kids - A 3-minute video showing colorful time-lapse of flowers blooming with clear narration. https://www.youtube.com/watch?v=eL3bM9qqXMo

- "Flower Parts and Pollination" by Crash Course Kids - An engaging 4-minute overview of flower structures and why bees visit flowers. https://www.youtube.com/watch?v=5yFmwjX5uMY