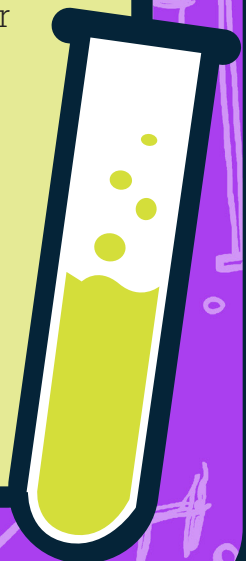


UNLOCKING SCIENCE HANDSON!

FLOWER DISSECTION

The scientific field of botany is a branch of biology that focuses on the study of plants. The book of Genesis in the Bible tells us about the very first botanist in history, Adam. The Bible tells us “the LORD God took the man and put him in the garden of Eden to work it and keep it” (Genesis 2:15, ESV). Adam would have learned about the botanical specimens he was cultivating and caring for in God’s creation. The Bible also tells us that God created plants to reproduce according to their kinds on the third day of the creation week. One of the best ways to learn about plant reproduction is by dissecting a flower. Lilies are classified as perfect, complete, monocot flowers. A perfect flower contains both the stamen (male reproductive part) and the carpel (female reproductive parts) in the same flower. An imperfect flower only has one of the reproductive structures. Lilies are complete flowers because they have sepals, petals, pistils, and stamens. An incomplete flower is missing one or more of the four essential structures. Lilies are also monocots because their petals are in multiples of three. Dicots have petals in fours or fives. (See page 3)

Extra Family Fun: For extra fun, pick a variety of wildflowers outside and press them using heavy books. Place each flower between two pieces of printer paper before pressing inside the books. After 2–4 weeks, carefully remove your flowers and place in sheet protectors. Now see if you can classify them according to their plant kind and unique characteristics (perfect or imperfect, complete or incomplete, monocot or dicot).



Lily Dissection

Supplies

- 1 lily flower or other complete flower
- Foam tray or paper plate
- Small scissors or dissection knife/scalpel
- Optional: Hand lens or magnifier app



Figure 1: Supplies

Lily Dissection Instructions

Fill in the blanks as you work through the dissection.

- 1 Observe your flower. Using the diagram below, identify the key structures on your specimen. Is the lily complete or incomplete?

- 2 Perfect or imperfect? _____
- 3 Monocot or dicot? _____
- 4 Carefully remove the sepals by pulling them downward toward the stem. Place them on your tray. How many sepals does your flower have?

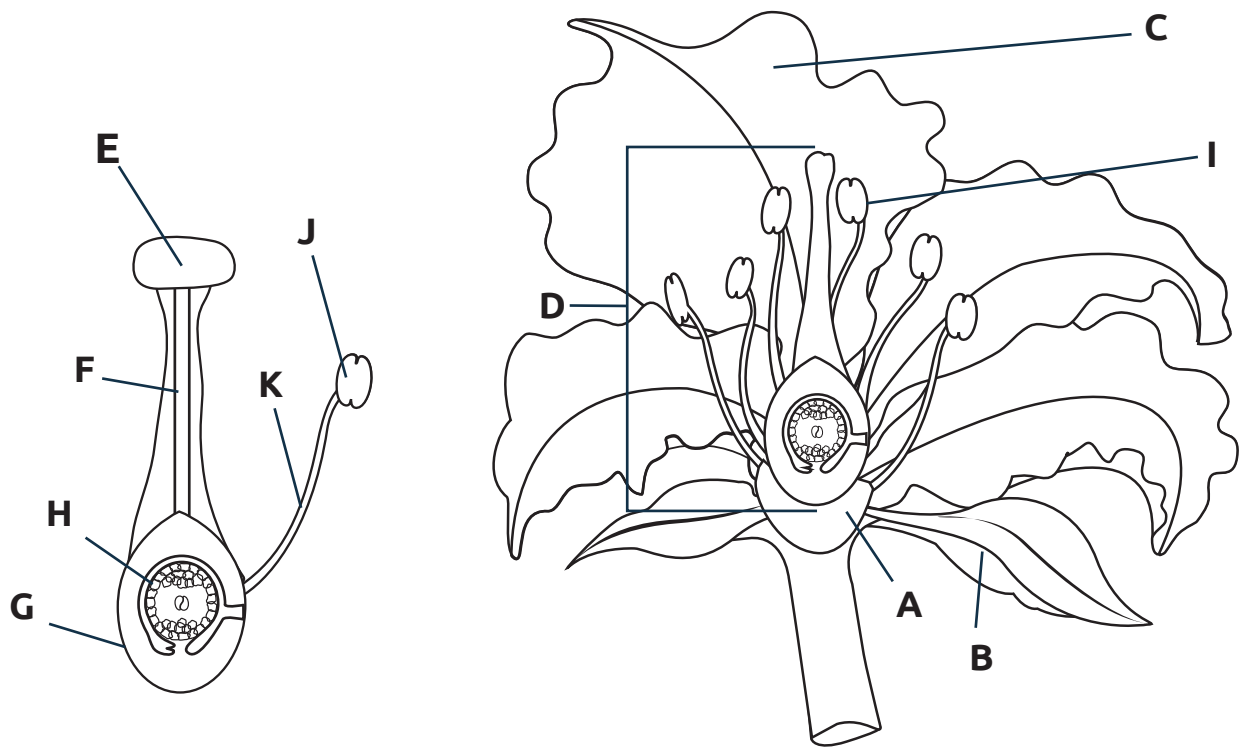
- 5 Carefully remove the petals by pulling them downward toward the stem. Place them on your tray. How many petals does your flower have?

- 6 Carefully remove the flower's stamens (male part of the plant which includes the filament and anther) by cutting them or gently pulling them off the stem. How many stamens does your flower have? _____
- 7 What relationship do you see between the number of petals and the number of stamens?

- 8 Remove a few pollen granules and observe with your hand lens (or app). They will appear oval in structure. If you smear pollen on a piece of paper, what color is it?

- 9 Observe the pistil (female part of the plant) which includes the stigma, style, and ovary. Carefully remove the stigma and style from the ovary. How does the top of the stigma feel?

- 10 Cut a very thin cross section sample of the ovary. Use your hand lens (or app) to see if you can observe the ovules inside the ovary. How many chambers do you see inside the ovary? _____
- 11 What relationship do you see in the number of ovary chambers and the number of petals? _____



The receptacle (A) is the part of the branch on which a flower forms.

Sepals (B) are leaf-like structures that surround and protect the flower before it blooms.

Petals (C) are the colorful part of the flower that attracts insects and even other small animals, such as mice, birds, and bats.

The flower has both male and female reproductive parts. The female reproductive structures are called carpels. In most flowers, the carpels are fused together to form a pistil (D). The pistil has three parts, which can be seen in the magnified view to the left. The stigma (E) at the top is often sticky and is where the pollen attaches.

The style (F) is the long tube that attaches the stigma to the ovary (G). Sperm from the pollen will travel down this tube to the ovules (H). The ovules, or eggs, are stored in the ovary until they are fertilized. Plants can only fertilize eggs of the same species. Special chemicals prevent sperm from fertilizing the eggs of flowers that are not the same kind.

The male reproductive structures are called the stamens (I). Each stamen consists of an anther (J), which produces pollen, and a filament (K), which supports the anther. Pollen produced by the anther is carried by insects or other animals to the pistil of another flower where it may fertilize the eggs.

Color the flower diagram, using different colors to distinguish the various parts.

Analysis Questions and Discussion

Comparing the data in the table:

- 1 How do you think the placement of the stamen (anther and filament) in relation to the stigma on the lily shows the ingenuity of our Creator God? *The stamen is located within close proximity of the stigma. The anther on the stamen holds the pollen granules (male genes). At the base of the stigma is the ovary which contains the ovules (female genes). For the lily flower, the location of the stamen to the stigma allows for easy pollination. Wind might blow the pollen granules onto the stigma, an insect may carry the pollen on their leg hairs to the stigma, and birds are also pollinators. Our all-powerful God thought through every detail needed for reproduction in every plant he created.*
- 2 In nature, the stigma of a flower will only allow pollen to travel down to the ovary for fertilization if the plant recognizes the pollen is from the same plant family or kind. How does this refute evolutionary ideas? *God created plants to reproduce according to their kinds (Genesis 1:11–12). Therefore, we would expect God to design plants to recognize and activate reproductive measures only within their same family or kind. That means that daisy pollen will only fertilize daisy ovules, rose pollen will only fertilize rose ovules, etc. If evolutionary ideas were true, we would see evidence contrary to this science in the fossil record and in specimens, but what we observe is flowers reproducing within their created kinds. In fact, fossilized botanical specimens resemble living flowers we have in the world today. This fossilized wild rose is dated 35 million years old by evolutionists, but yet looks strikingly similar to wild roses today.*



en.wikipedia.org/wiki/Stonerose_Interpretive_Center



en.wikipedia.org/wiki/Rosa_acicularis

ANALYSIS QUESTIONS AND DISCUSSION CONTINUED

- 3 Read Genesis chapters 1–3. Compare and contrast plants before sin entered the world and after sin entered the world.

	Plants Before Sin	Plants After Sin
Who did God give “dominion” over the plants? (Genesis 2:15)	<i>Humans</i>	<i>Humans</i>
Who ate the plants as food? (Genesis 1:29)	<i>Adam, Eve, and the animals</i>	<i>Adam, Eve, their descendants, and the animals. It is likely once sin entered the world, that humans disobeyed God’s command and began to eat meat. It was not until after the global flood that God gave humans permission to eat meat. (Genesis 9:3)</i>
What was the condition of plants before and after sin?	<i>Before sin, God’s creation was perfect and all plants were beneficial in some way to the humans and animals, whether pleasing to look at or good for food. (Genesis 2:9)</i>	<i>As a punishment for man’s sin against God, the ground was cursed. There were now weeds, thistles, thorns, and harmful plants. (Genesis 3:17–18)</i>
How do plants reproduce?	<i>According to their kind (Genesis 1:11)</i>	<i>According to their kind (Genesis 1:11)</i>

“And why are you anxious about clothing? Consider the lilies of the field, how they grow: they neither toil nor spin, yet I tell you, even Solomon in all his glory was not arrayed like one of these. But if God so clothes the grass of the field, which today is alive and tomorrow is thrown into the oven, will he not much more clothe you, O you of little faith?” (Matthew 6:28–30, ESV)