

Growing Morning Glories and Studying Their Circadian Rhythms



Name: _____ Date: _____

QUESTION

Do morning glories follow a circadian rhythm—opening in the morning and closing at night—even when light conditions are controlled?

BACKGROUND

Circadian rhythms are about 24-hour cycles in living things that are not caused directly by light or temperature. Many plants, including morning glories, open their flowers in the morning and close them in the afternoon or evening. This experiment investigates whether this pattern continues even in constant light or constant dark.

MATERIALS

- Morning glory seeds
- Potting soil
- 2–3 small pots (with drainage holes)
- Watering can or spray bottle
- Trellis or small support (optional)
- Grow light or lamp (for constant light setup)
- Light-proof box or large opaque container (for constant dark setup)
- Ruler
- Notebook or printed data sheet
- Pencil
- Clock or timer

PROCEDURE

- Plant the Seeds** Soak seeds in water overnight. Plant 2–3 seeds in each pot about 1/2 inch deep. Keep soil moist.
- Grow the Plants** Place all pots in normal daylight (about 12–14 hours of light) until the plants begin to flower. Add a trellis if desired.
- Set Up Experimental Groups** When flowers appear, divide your plants into these groups (at least one pot per group):
 - Control Group: Normal day/night cycle (about 12–14 h light / 10–12 h dark).
 - Constant Light Group: Place under a grow light 24 hours a day.
 - Constant Dark Group: Place in a light-proof box or container 24 hours a day. Check briefly using a dim red light if needed.
- Observe and Record** For at least 3 days, observe the flowers in each group every 2–3 hours. Record whether the flowers are OPEN or CLOSED. Also note the time, light condition, and any other observations.
- Keep Conditions Consistent** Water all plants as needed. Keep temperature as even as possible.

WHAT TO MEASURE

- Time of day
- Flower status: OPEN or CLOSED
- Light condition (Control / Constant Light / Constant Dark)
- Any other notes (weather, plant health, observations)

DATA TABLE (Example)

Date:	Time	Control (Normal Light/Dark)		Constant Light (24 h Light)		Constant Dark (24 h Dark)	
	Time	Flower Status (OPEN/CLOSED)	Notes	Flower Status (OPEN/CLOSED)	Notes	Flower Status (OPEN/CLOSED)	Notes
Day 1	6:00 AM						
	9:00 AM						
	12:00 PM						
	3:00 PM						
	6:00 PM						
	9:00 PM						
	12:00 AM						

ANALYSIS & CONCLUSION

1. What patterns did you observe in each group?
2. Did the morning glories continue to open in the morning and close at night in constant light?
3. Did they continue this pattern in constant dark?
4. What does this suggest about the role of circadian rhythms in morning glories?
5. How could you extend this experiment?

THINK FURTHER

Do you think other plants or animals have circadian rhythms? Design an experiment to find out!