

Gargoyle Gecko Adaptations & Physiology Worksheet

6 short-answer questions — answer key on the last page

Instructions: answer each question in 2–4 sentences, using the fact sheet as a reference.

1. Gargoyle geckos can regrow a lost tail, but their close relative the crested gecko cannot. Explain one possible advantage and one possible disadvantage of being able to regrow a tail.
2. What is the function of the bony crests on a gargoyle gecko's head, and how did the species get its common name?
3. Gargoyle geckos are omnivores, eating a powdered meal-replacement diet as well as insects, fruit, and nectar in the wild. Why might an omnivorous diet be an advantage for a species living in a forest habitat with seasonal changes in food availability?
4. Explain why a gargoyle gecko's tail is thicker at some times than others, and what this tells us about how the animal stores energy.
5. Gargoyle geckos are crepuscular to nocturnal, with vertical pupils that narrow in bright light. Describe how this pupil shape might help the animal survive.
6. The gargoyle gecko and the crested gecko are both native to the same island, New Caledonia. Name two adaptations that differ between the two species, and explain why studying closely related species that differ in specific traits is useful to biologists.

Answer Key

- 1.** Advantage: escaping a predator that has grabbed the tail, since the gecko survives and can regrow it later. Disadvantage: energy cost of tail regrowth, and a regrown tail loses its original fat-storage bulk and texture, at least temporarily. (Accept any reasonable, supported answer.)
- 2.** The crests are raised, horn-like bumps behind the eyes and along the skull that resemble carved stone gargoyles on old buildings, which is where the species gets its common name.
- 3.** An omnivorous diet gives more flexibility when one food source (e.g. a particular insect) becomes scarce seasonally, since the animal can rely on fruit, nectar, or sap instead, reducing the risk of starvation.
- 4.** The tail stores fat reserves the gecko builds up when food is plentiful and draws on when food is scarce, similar to how some mammals store fat before a lean season; a thin tail signals the animal has drawn down its reserves.
- 5.** Vertical pupils narrow to a thin slit in bright light, protecting sensitive night-adapted eyes, and open wide in darkness to gather more light for hunting and moving safely after dusk.
- 6.** Example differences: gargoyle geckos lack sticky toe pads and can regrow a tail, while crested geckos have sticky toe pads and cannot regrow a tail. Studying closely related species that differ in specific traits helps biologists isolate which environmental pressures or evolutionary paths produced each trait, since shared ancestry controls for many other variables.