

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

Weekly Reading HW

HW Wk \_\_\_\_\_

*Directions: Read and annotate the passage below. Then answer the questions.*

### Wily Cockroaches Find Another Survival Trick: Laying Off the Sweets

Everyone knows that cockroaches are the ultimate survivors. They have evolved and thrived for 350 million years and completely adapted to the human species. But recently, some populations of cockroaches have evolved a highly effective defense against sweet-tasting poison baits. Baits made with glucose, a form of sugar that is sweet, now taste bitter to the cockroaches. This adaptation is an elegant example of quick evolutionary change in behavior. It offers the pest control industry valuable insights into enemy secrets, and could even reveal some clues for the fight against malaria-carrying mosquitoes, which are far more dangerous to human health than roaches.

In a new study, researchers set out to explain why some populations of cockroaches avoid poison bait that is laced with glucose, which is normally supposed to attract them. This behavior first appeared in the early 1990s, when exterminators started using poison baits instead of spraying. The pest-control industry has always developed new poisons because roaches and other pests become resistant to their effects, just as bacteria become resistant to antibiotics. But in this case, the problem was not that the poison had become ineffective. The cockroaches just seemed to circumvent any bait that had glucose.

The researchers wanted to figure out how this inherited behavior worked. Instead of taste buds, cockroaches have taste hairs on many parts of their bodies. One taste hair responds only to sugars and other sweet substances; the other responds only to bitter substances. Whenever a molecule of something sweet attaches to a sweet detector, the cockroach brain senses sweetness, which makes it want to continue eating. Whenever a molecule of something bitter attaches to the bitter detector, the brain senses bitterness, which makes the roach want to avoid that substance. But somehow the roaches had changed so that the glucose made the bitter detector active.

Although the researchers are still trying to figure out the details of the cockroaches' adaptation, the research, however, may be relevant far beyond roach control. It could reveal information about the behavior of mosquitoes that spread malaria. Recently, it was discovered that the mosquito changed its behavior and no longer rests on walls that are treated with insecticide (poisons that kill insects). Instead it tends to rest on the ceilings and walls that are not treated with insecticide. Researchers still don't understand what caused this change in behavior of the mosquito, but the research with the cockroaches could offer useful insights.

1. (RST.9-10.2) The main idea of the passage is that:
  - a. Cockroaches have adapted to humans and will most likely live alongside humans forever.
  - b. Cockroaches have adapted their tastes so that they now prefer bitter tastes instead of sweet tastes.
  - c. Cockroaches have adapted to avoid glucose-laced traps so now there is no way to get rid of them.
  - d. Cockroaches have adapted to avoid glucose-laced traps, an adaptation that could offer insight to the behavior of malaria-carrying mosquitoes.

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2. (RST.9-10.4) As it is used in the second paragraph, the term *circumvent* has the same meaning as:
- a. Target
  - b. Sidestep
  - c. Attack
  - d. Surrender to
3. (RST.9-10.1) Which of the following statements is NOT supported by the passage?
- a. Some cockroaches started to avoid glucose-laced bait traps sometime in the 1990s.
  - b. Some cockroaches in homes today avoid glucose-laced bait traps.
  - c. Some cockroaches have avoided glucose-laced bait traps for the last 350 million years.
  - d. Some cockroaches sense bitterness when tasting glucose.
4. (RST.9-10.1) It can reasonably be inferred from the last paragraph that:
- a. More research will be done on cockroaches in hopes that the results will inform scientists about malaria-carrying mosquitoes.
  - b. Scientists will conduct further studies on cockroaches and other pests that infest people's homes.
  - c. Exterminators will now sell bitter-tasting bait traps in hopes of getting rid of all cockroaches from homes.
  - d. Glucose-laced bait traps will now be used in order to catch malaria-carrying mosquitoes.

5. (RST.9-10.1) How do cockroaches taste?

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6. (RST.9-10.1) Why did exterminators first develop bait traps with glucose?

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*Adapted from the article, "Wily Cockroaches Find Another Survival Trick: Laying Off the Sweets" by James Gorman for the New York Times, on May 23, 2013.*