

[My sites](#) / [21F-EEBIOL184-1](#) / [Assessment/Exam on Unit 5 - Plasticity \(Nov 15\)](#) / [Exam 5, Part 1 - Multiple Choice](#)

Fall 2021 - **Week 10**

Fall 2021 - EE BIOL184-1 - SEARS

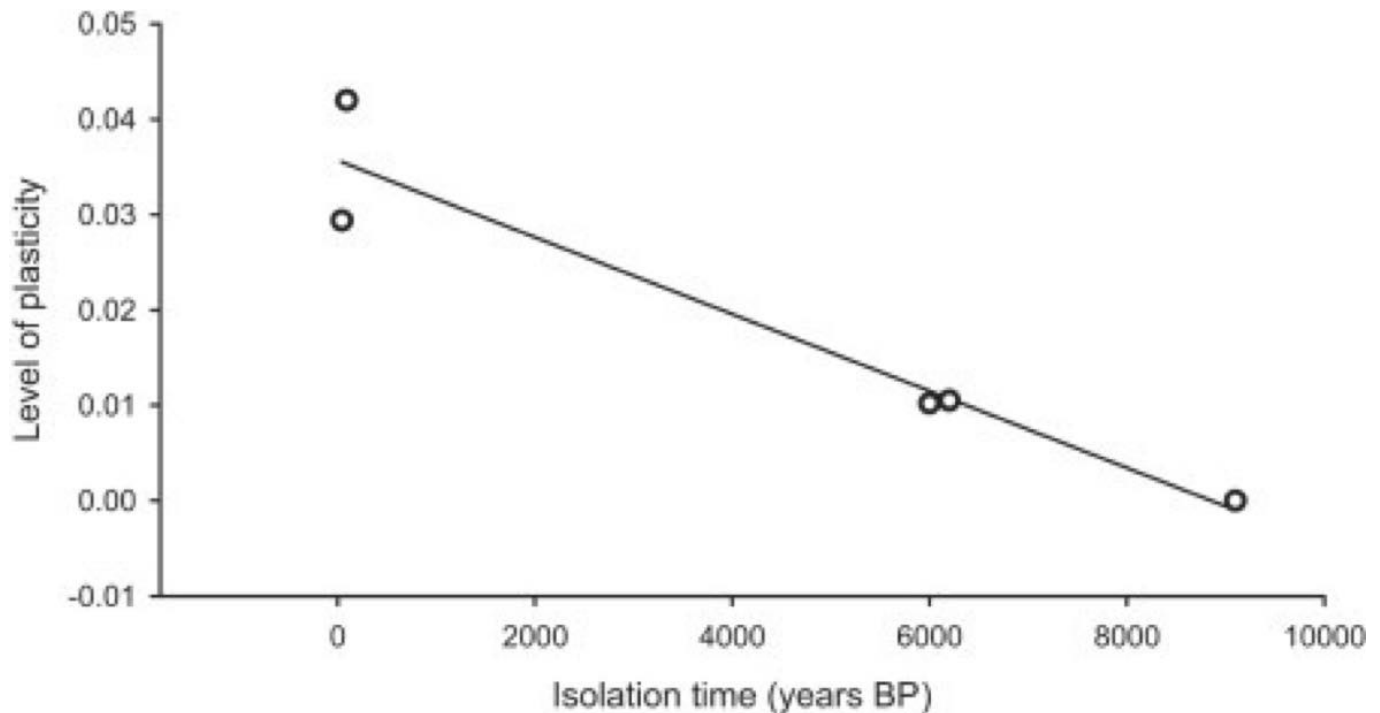
Started on	Monday, 15 November 2021, 4:26 PM PST
State	Finished
Completed on	Monday, 15 November 2021, 4:51 PM PST
Time taken	25 mins 45 secs
Grade	9.00 out of 10.50 (86%)

Question 1

Correct

1.50 points out of 1.50

Some populations of tiger snakes (*Notechis scutatus*) left the mainland and invaded islands starting 9,000 years ago. The snakes eat larger prey on islands than on the mainland. In line with this, heads of island snakes are significantly larger than heads of mainland snakes. Populations that recently (<2000 years) invaded the islands achieve larger head sizes through developmental plasticity when exposed to large prey during development (see figure below).



In contrast, populations that invaded the island >8000 years ago always have larger heads and do not display plasticity. Assuming the older populations (>8000 years) went through an evolutionary stage similar to that of the younger populations (<2000 years), which of the terms below BEST describes the evolution of larger head size in the OLDER populations of tiger snakes?

- a. Genetic accommodation
- b. Genetic assimilation
- c. Polyphenism
- d. Enabling mutation



The correct answer is:

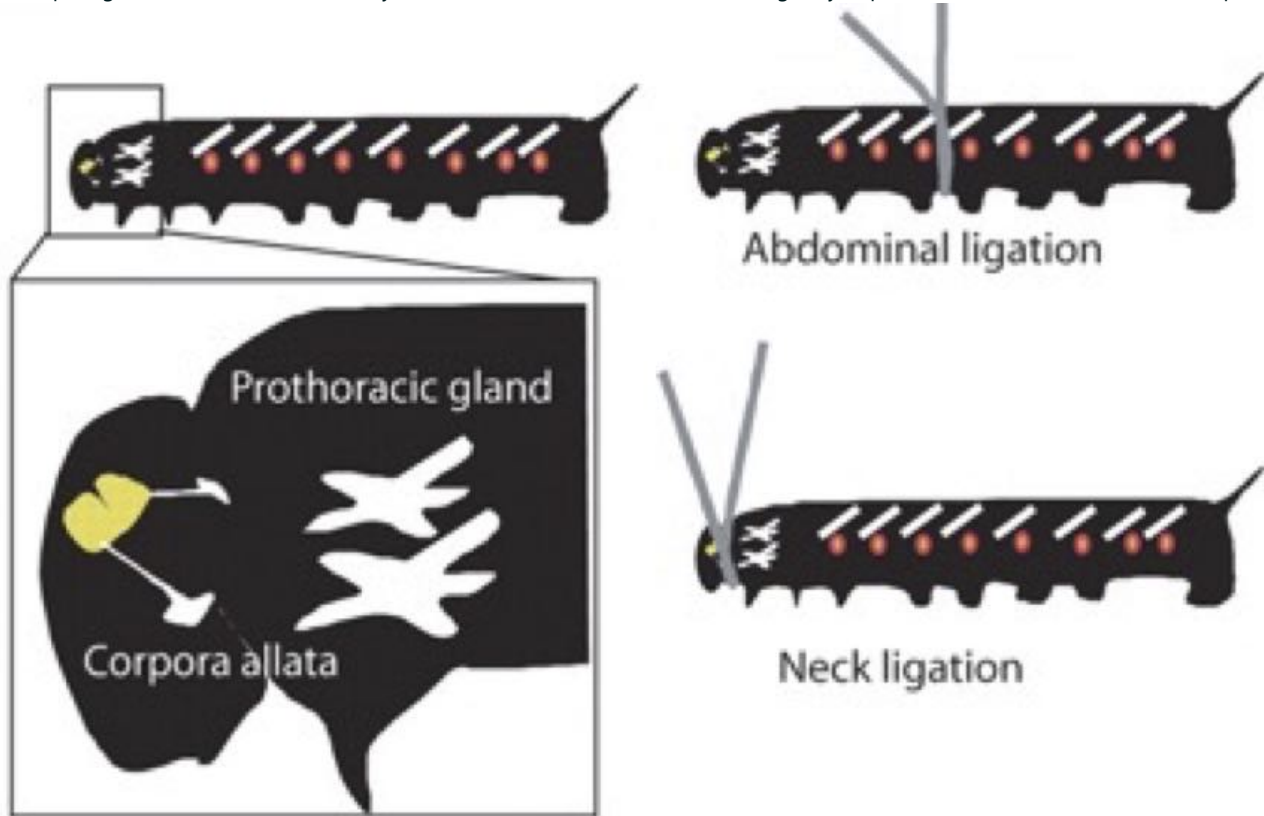
Genetic assimilation

Question 2

Incorrect

0.00 points out of 1.50

You are a scientist studying wild-type tobacco hornworms. Wild-type hornworms are always green as adults, despite the temperature during which they develop. You perform the experiment shown in the figure on the right using the wild-type hornworms as test subjects (note: the figure is just shown to illustrate the location of the ligation, and should NOT be assumed to reflect the actual coloration in wild-type hornworms). In this experiment, you ligate the developing hornworm either at the abdomen or at the neck and then heat-shock the developing hornworm. Based on what you learned in class, what of the following do you predict will be an outcome of this experiment?



- a. Neck ligated hornworms will be green on the head side of the ligation and green on the tail side of the ligation
- b. Neck ligated hornworms will be black on the head side of the ligation and green on the tail side of the ligation
- c. Abdominally ligated hornworms will be green on the head side of the ligation and black on the tail side of the ligation
- d. Abdominally ligated hornworms will be black on the head side of the ligation and black on the tail side of the ligation

✘

The correct answer is:

Neck ligated hornworms will be green on the head side of the ligation and green on the tail side of the ligation

Question 3

Correct

1.50 points out of 1.50

Tadpoles of the spadefoot toad species *Spea multiplicata* have either a carnivorous and omnivorous phenotype. Which of the following is thought to be an advantage of the carnivorous phenotype over the omnivorous phenotype?

- a. Carnivores eat more food types than omnivores
- b. Carnivores metamorphose in less time than omnivores
- c. Carnivores are smaller in size than omnivores
- d. Carnivores make smaller jaw muscles than omnivores



The correct answer is:

Carnivores metamorphose in less time than omnivores

Question 4

Correct

1.50 points out of 1.50

In class we discussed side-blotched lizards. Side-blotched lizards typically live on sand, but a population moved to live on black lava flows several thousand years ago. Which of the following is a difference between today's sand-dwelling side-blotched lizards and today's black lava-dwelling side-blotched lizards?

- a. Lava-dwelling lizards can get lighter when placed on sand, but sand-dwelling lizards do not get darker when placed on lava
- b. Sand-dwelling lizards can get darker when placed on lava, but lava-dwelling lizards do not get lighter when placed on sand
- c. Even after being kept on lava for long periods of time, sand-dwelling lizards are darker than lava-dwelling lizards
- d. Even after being kept on sand for long periods of time, lava-dwelling lizards are darker than sand-dwelling lizards.



The correct answer is:

Even after being kept on sand for long periods of time, lava-dwelling lizards are darker than sand-dwelling lizards.

Question 5

Correct

1.50 points out of 1.50

Bicyclus anyana butterflies often have larger ventral eyespots during the wet season and smaller ventral eyespots during the dry season. What is the environmental cue that drives the development of this difference in phenotype?

- a. photoperiod
- b. humidity
- c. UV index
- d. temperature



The correct answer is:
temperature

Question 6

Correct

1.50 points out of 1.50

Continuing on with the *Bicyclus anyana* butterflies... Which of the following would represent an “enabling mutation” for the eyespot plasticity described in the question above?

- a. A mutation in Gene A that allows butterflies to develop even larger dorsal eyespots (relative to dorsal eyespot size described in the question above) during the wet season
- b. A mutation in Gene C that allows butterflies to develop even more dorsal eyespots (relative to the number of eyespots described in the question above) during the wet season
- c. A mutation in Gene B that allowed butterflies to develop different eyespot sizes in response to environmental cues
- d. A mutation in Gene D that results in loss of the butterflies’ ability to develop different eyespot sizes in response to environmental cues



The correct answer is:
A mutation in Gene B that allowed butterflies to develop different eyespot sizes in response to environmental cues

Question 7

Correct

1.50 points out of 1.50

In which of the following environments would you most expect to find organisms with phenotypes that are plastic?

- a. Homogenous environment with one type of primary habitat
- b. Nutrient-rich environment with abundant food resources
- c. Highly seasonal environment in which temperature varies greatly throughout the year
- d. Static environment that has remained unchanged for thousands of years



The correct answer is:

Highly seasonal environment in which temperature varies greatly throughout the year

[◀ Lecture12 Plasticity2](#)

Jump to...

[Exam 5, Unit 2 - Essay ... ▶](#)