

[My sites](#) / [21F-EEBIOL184-1](#) / [Assessment/Exam on Unit 4 - Developmental constraints \(November 8\)](#) / [Exam 4, Part 1 - Multiple Choice](#)

Fall 2021 - **Week 10**

Fall 2021 - EE BIOL184-1 - SEARS

Started on Monday, 8 November 2021, 7:31 PM PST

State Finished

Completed on Monday, 8 November 2021, 8:14 PM PST

Time taken 42 mins 23 secs

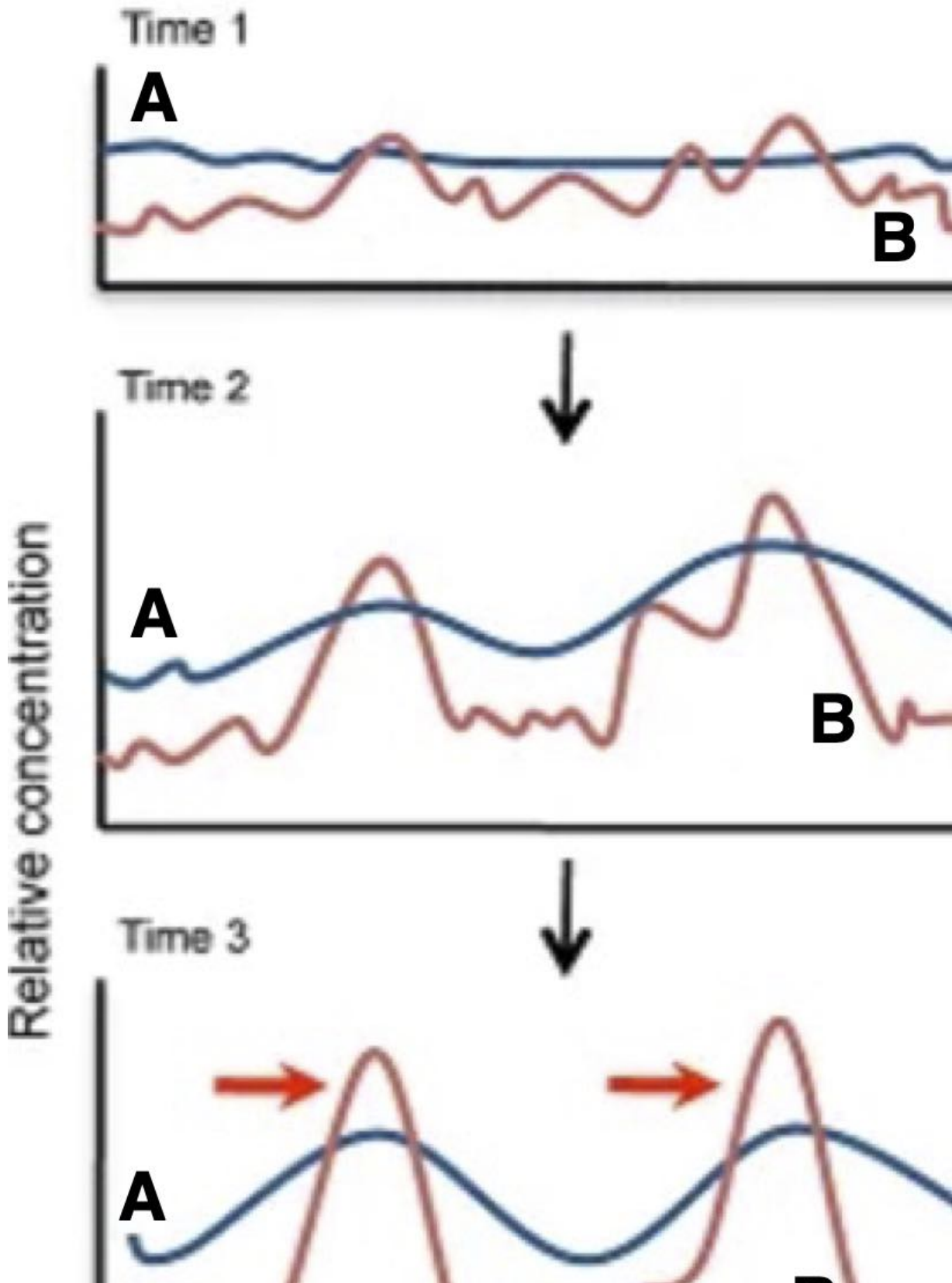
Grade **10.00** out of 12.00 (**83%**)

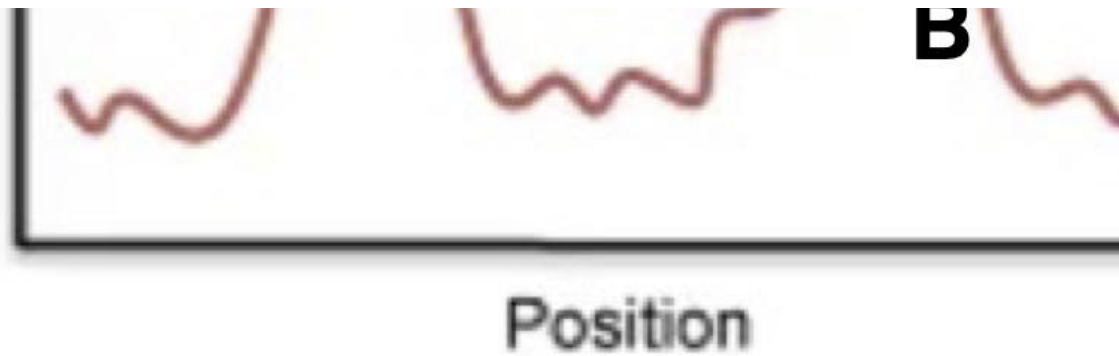
Question 1

Correct

2.00 points out of 2.00

The figure below shows the predicted pattern of expression of an activator and an inhibitor, based on the reaction-diffusion model for development. Which of the following lines in the figure depicts the pattern of gene expression of the ACTIVATOR?





- a. A
- b. B



The correct answer is:

B

Question 2

Correct

2.00 points out of 2.00

The reaction-diffusion model has been hypothesized to apply to formation of tetrapod digits. Based on this model, what is the expected adult digit phenotype in an experiment in which the gene *Bmp* is inhibited during development, or in an experiment in which the gene *Wnt* is inhibited during development? Please note that this question does NOT ask about an experiment when *Bmp* and *Wnt* are inhibited at the same time, but rather when each is inhibited independently in their own, separate experiment.

- a. More than 5 clearly defined digits are formed
- b. 1, 2, or 3 clearly defined digits are formed
- c. 4 or 5 clearly defined digits are formed
- d. No clearly defined digits are formed



The correct answer is:

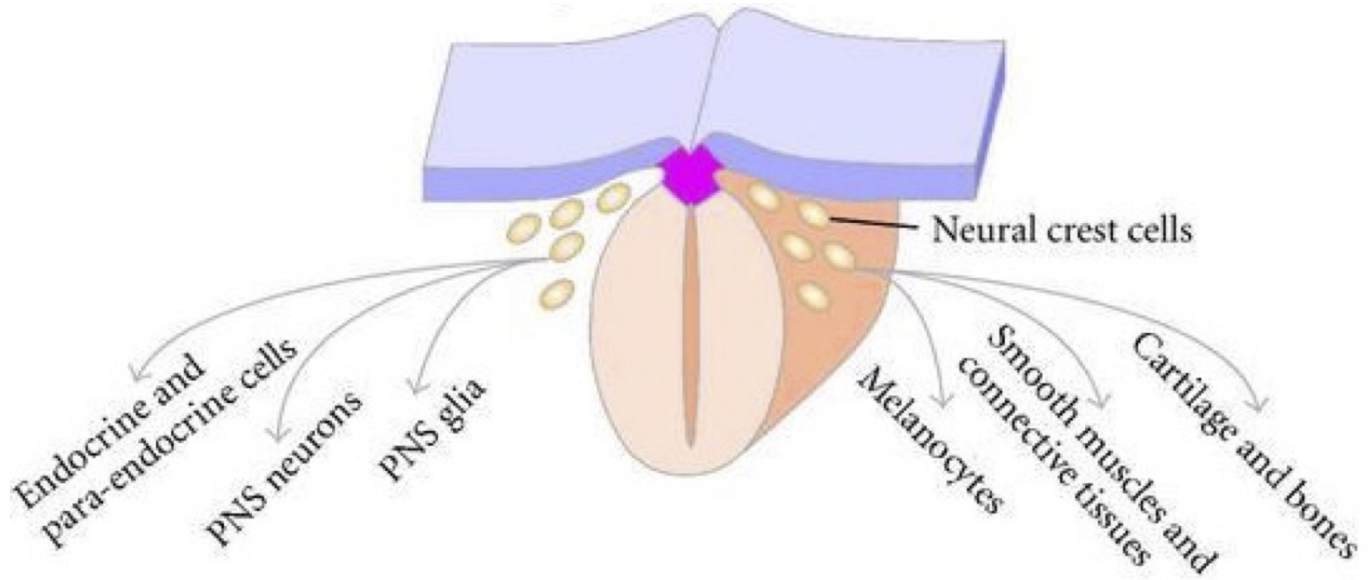
No clearly defined digits are formed

Question 3

Correct

2.00 points out of 2.00

The neural crest is a population of stem cells, unique to vertebrates, that form near the neural tube and disperse throughout the embryo to form tissues ranging from the face skeleton to the nervous system of the gut (see figure below). Based on this description, which basic cellular mechanism is most important to neural crest cell development?



- a. migration
- b. proliferation
- c. apoptosis
- d. adhesion

The correct answer is:
migration

Question 4

Incorrect

0.00 points out of 2.00

Humans develop scurvy when they do not get enough Vitamin C in their diets. For example, Magellan, who completed the first around-the-world voyage, lost 80% of his crew to scurvy.

Ancestral primates could make Vitamin C. This ability was lost in monkeys and their ancestors, including humans.

Humans' inability to make Vitamin C, even in situations in which it might be selectively advantageous, represents the following type of constraint:

- a. physical constraint
- b. morphogenetic constraint
- c. morphodynamic constraint
- d. phylogenetic constraint



The correct answer is:
phylogenetic constraint

Question 5

Correct

2.00 points out of 2.00

You are a scientist. Through some complicated bioinformatic analyses, you discover a new hCONDEL, which you name hCONDEL500. Your next step is to figure out if the chimp-version of hCONDEL500 drives expression in the developing embryo, and if so, where. Which of the following would be the most appropriate experiment to achieve this goal?

- a. PCR assay
- b. Immunohistochemical assay
- c. In situ hybridization assay
- d. Transgenic reporter assay



The correct answer is:
Transgenic reporter assay

Question 6

Correct

2.00 points out of 2.00

Indejan et al 2016 identified hCONDEL332, which they hypothesize is linked to the larger neocortex size of humans relative to their ancestors. Which of the following is a correct order of proposed events for this transition?

- a. Loss of hCondel332, Reduction in cell cycle repression, Increase in rates of cell proliferation, Loss of GADD45g expression, Expansion of the human neocortex
- b. Loss of GADD45g expression, Loss of hCondel332, Increase in rates of cell proliferation, Reduction in cell cycle repression, Expansion of the human neocortex
- c. Loss of hCondel332, Loss of GADD45g expression, Reduction in cell cycle repression, Increase in rates of cell proliferation, Expansion of the human neocortex
- d. Loss of GADD45g expression, Increase in rates of cell proliferation, Loss of hCondel332, Reduction in cell cycle repression, Expansion of the human neocortex

The correct answer is:

Loss of hCondel332, Loss of GADD45g expression, Reduction in cell cycle repression, Increase in rates of cell proliferation, Expansion of the human neocortex

[◀ Poster TimelineOutline](#)

Jump to...

[Exam 4, Part 2 - Essay ... ▶](#)