BIOL 01104, Spring 2020
EvoDots Activity Questions/Assignment
Instructor: Dr. Spielman
Due Friday 2/28/20 at 10:00 on Blackboard

Your name:_____

Full names INCLUDING LAST NAMES of your group members:

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-
-
-

Exciting news: The entire group can hand in a SINGLE DOCUMENT if and only if we finish IN CLASS TODAY! *~motivation~*
As usual, please answer in a different color! For ALL TABLES make sure they do NOT go over a page break!

Exercise #1 Questions: Variable speed, heritable speed variation, and selective survival

1. What is your prediction for dot phenotype frequencies after 5 generations?

2. Complete the table below with your results:

Generation	Predation	← Slower Faster →						
		1 (Black)	2 (Purple)	3 (Blue)	4 (Green)	5 (Yellow)	6 (Orange)	7 (Red)
1	Before							
	After							
2	Before							
	After							
3	Before							
	After							
4	Before							
	After							
5	Before							
	After							

3. How, if at all, did dot phenotype frequencies change after 5 generations? Was your prediction right or wrong?

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4. What do you predict for the frequency of dot phenotypes if you did this for 50 generations of predation (instead of 5), under this exercise's conditions?

5. Do you conclude that the population of dots evolved? Why or why not?

6. Do you conclude that natural selection specifically acted on the dot population? Why or why not?

Exercise #2 Questions: NO Variable speed, heritable speed variation, and selective survival

1. What is your prediction for dot phenotype frequencies after 5 generations?

2. Complete the table below with your results:

Generation	Predation	← Slower Faster →						
		1 (Black)	2 (Purple)	3 (Blue)	4 (Green)	5 (Yellow)	6 (Orange)	7 (Red)
1	Before							
	After							
2	Before							
	After							
3	Before							
	After							
4	Before							
	After							
5	Before							
	After							

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3. How, if at all, did dot phenotype frequencies change after 5 generations? Was your prediction right or wrong?

4. What do you predict for the frequency of dot phenotypes if you did this for 50 generations of predation (instead of 5), under this exercise's conditions?

5. Do you conclude that the population of dots evolved? Why or why not?

6. Do you conclude that natural selection specifically acted on the dot population? Why or why not?

Exercise #3 Questions: Variable speed, NO heritable speed variation, and selective survival

1. What is your prediction for dot phenotype frequencies after 5 generations?

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2. Complete the table below with your results:

Generation	Predation	← Slower Faster →						
		1 (Black)	2 (Purple)	3 (Blue)	4 (Green)	5 (Yellow)	6 (Orange)	7 (Red)
1	Before							
	After							
2	Before							
	After							
3	Before							
	After							
4	Before							
	After							
5	Before							
	After							

3. How, if at all, did dot phenotype frequencies change after 5 generations? Was your prediction right or wrong?

4. What do you predict for the frequency of dot phenotypes if you did this for 50 generations of predation (instead of 5), under this exercise's conditions?

5. Do you conclude that the population of dots evolved? Why or why not?

6. Do you conclude that natural selection specifically acted on the dot population? Why or why not?

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Exercise #4 Questions: Variable speed, heritable speed variation, and NO selective survival

1. What is your prediction for dot phenotype frequencies after 5 generations?

2. Complete the table below with your results:

Generation	Predation	← Slower Faster →						
		1 (Black)	2 (Purple)	3 (Blue)	4 (Green)	5 (Yellow)	6 (Orange)	7 (Red)
1	Before							
	After							
2	Before							
	After							
3	Before							
	After							
4	Before							
	After							
5	Before							
	After							

3. How, if at all, did dot phenotype frequencies change after 5 generations? Was your prediction right or wrong?

4. What do you predict for the frequency of dot phenotypes if you did this for 50 generations of predation (instead of 5), under this exercise's conditions?

5. Do you conclude that the population of dots evolved? Why or why not?

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6. Do you conclude that natural selection specifically acted on the dot population? Why or why not?

Final Questions. ***If not finished in class, you must answer these questions YOURSELF without your group (i.e. in YOUR OWN WORDS).***

1. Based on your overall results, do you conclude that is it possible to have evolution occur without natural selection? Is it possible to have natural selection occur without evolution? Explain your reasoning in 2—4 sentences.

2. Based on your overall results, what do you conclude are the roles of variation and heritability in natural selection? In evolution more generally? Explain your reasoning in 3—5 sentences.

3. In this program, individual dots never change their speed (or size). Given that individual dots never vary in their lifetime, how is it possible that the dot population could have evolved? Explain your reasoning in 2—3 sentences.

4. What role did predation (i.e., you clicking the dots) have in causing the population to evolve? In other words, do you expect the population would have evolved without any predators? Why or why not? Explain your reasoning in 3—5 sentences.