L5 Exit Ticket

Part 1

Mutations in Rock Pocket Mice

1. How did our class define “mutation”?

2. Is the following statement true or false? Justify your answer in one or two sentences: “Mutations are caused by selective pressure in the environment.”

3. Is the following statement true or false? Justify your answer in one or two sentences: “The same mutation could be advantageous in some environments but deleterious in others.”

4. Is the following statement true or false? Justify your answer in one or two sentences: “The appearance of dark-colored volcanic rock caused the mutation for black fur to appear in the rock pocket mouse population.”

5. Is the following statement true or false? Justify your answer in one or two sentences: “The migration of humans to areas of high elevation caused the mutation for high arterial oxygen saturation in human populations.

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Part 2

How did some populations get a higher frequency of alleles that are linked to high arterial oxygen saturation?

On Your Own

Use what you have learned so far from the readings, models, and simulations you have engaged with from Lesson 1 to now to explain how and why populations that have lived for thousands of years at high altitude have a higher frequency of the allele that is linked to high arterial oxygen saturation.

Look over the previous models and Gotta-Have-It Checklists you've developed. In the space below, list the important components of the models we've developed as a class that are necessary to explain why some populations have a different frequency of some alleles when compared to other populations.

Examine those same models and Gotta-Have-It Checklists. Now, describe how the important components of the models you listed above are *interacting with each other*. Record those descriptions below.

Putting It Together

Use the components and interactions you've listed in the previous space to write a mechanistic explanation that answers this question: *How did some populations get a higher frequency of alleles that are linked to high arterial oxygen saturation?*

6. We learned earlier that there is another population in the Andes with a long history of living at high elevations, who also have physiological adaptations to be better suited to the low oxygen environment. Based on what you learned about the rock pocket mouse fur color mutations, do you expect each of the populations living at high altitude to have the same mutations? Why or why not?