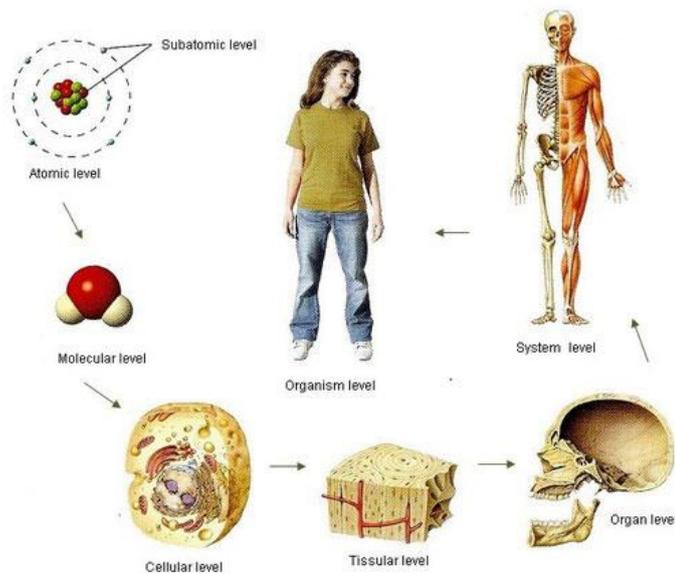


# stemco Sample Questions

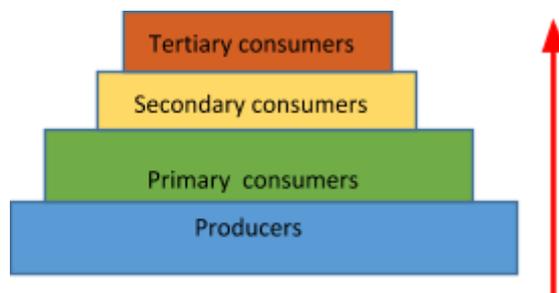
BioCo

1. Scientists classify organisms at different levels based on discrete features that make them unique. The differences can be found in both the structure and function of parts of the systems at each level of analysis.



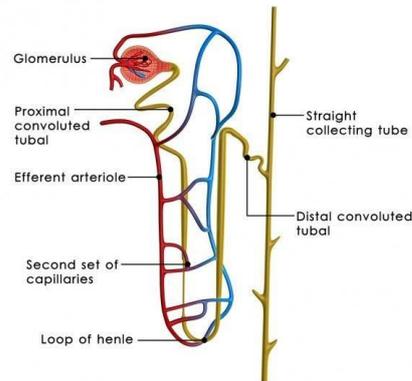
Which of the following pairs of organisms differ from each other *the most* at the *cellular level*?

- A. Mouse vs cow
  - B. Grasshopper vs corn
  - C. E-coli vs algae
  - D. Tomato vs human
2. You are given a pyramid of energy where the energy is passed through multiple trophic levels. Where do you think herbivores would take place in this pyramid?



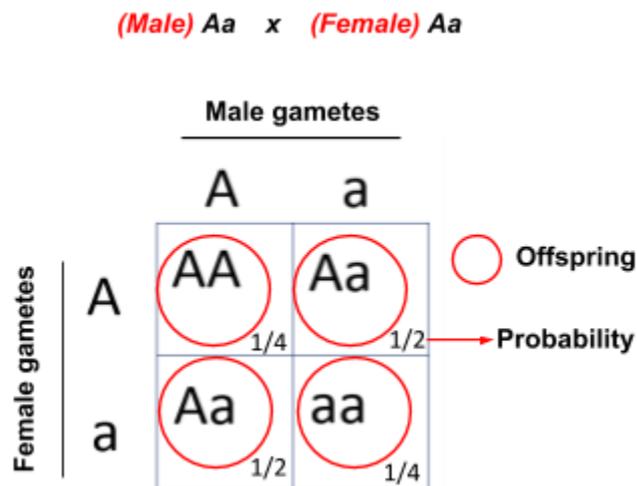
- A. Producers
- B. Primary consumers
- C. Secondary consumers
- D. Tertiary consumers

3. What would our kidneys not be able to do, if we lacked the loop of Henle?



- A. Create a hyperosmotic urine
- B. Create an isosmotic urine
- C. Reabsorb urea
- D. Reabsorb NaCl

4. The cross between two double heterozygous individuals results in phenotypic segregation 9:3:3:1. Using the Punnett square one can identify the genotypic ratio of all possible outcomes. Note that in double heterozygous individuals two genes are passed to the next generation independently from each other.



Suppose, you are about to make a cross of two plants with genotypes AaBB and AABb. What is the probability of getting an offspring with AAbb genotype?

- A. 0
- B. 1/2
- C. 1/4
- D. 1/8

5. A student performed a set of experiments to study the effects of various environmental factors on the plant growth. In each experimental group, she used three bean sprouts in the beginning before applying the different conditions.

What conclusion *cannot* be made from the data?

<b>Light</b>	<b>Water</b>	<b>Soil</b>	<b>Plant growth in <i>cm</i></b>
placed in a dark cabinet	Once daily	Soil from grandma's garden	2 cm, 0 cm (died), 0 cm (died)
placed on a window	Once daily	Soil from grandma's garden	10 cm, 12 cm, 13 cm
placed in a dark cabinet	Once a week	Sand from the beach	1 cm, 0 cm (died), 0 cm (died)
placed on a window	Once a week	Soil from grandma's garden	14 cm, 8 cm, 12 cm

- A. light is necessary for plant growth
- B. watering schedule does not have much of an effect on plant growth
- C. soil from grandma's garden is better than sand for plant growth
- D. to improve accuracy more bean sprouts should be used in each experimental group



# Answers

1. C

2. B

3. A

4. A

5. C