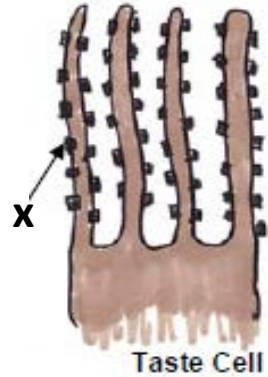
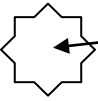


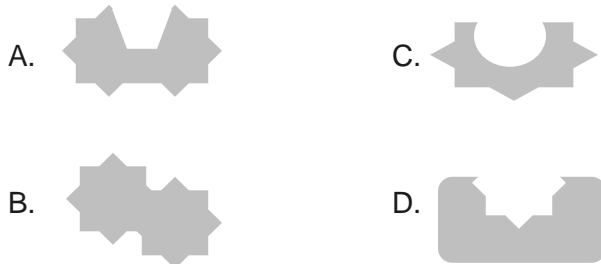
## Quiz - Taste Blind?

- The diagram on the right illustrates part of a single taste cell. The tiny structures labeled X on the diagram are
  - taste buds.
  - PTC molecules.
  - taste receptors.
  - taste neurons.

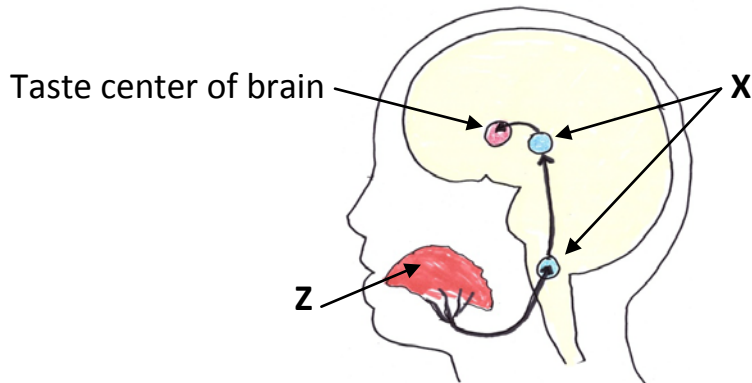


- A person suddenly loses the ability to taste certain bitter foods. Which is the least likely explanation for the change in the person's ability to taste bitter foods?
  - The person's memory centers have been damaged.
  - A stroke has damaged a specific region of the person's brain.
  - The bitter receptors in the person's taste buds have been blocked.
  - The nerve connecting the tongue to the brain has been damaged.
- The allele for the ability to taste bitter substances is thought to be an evolutionary adaptation because it
  - increases species ability to compete for food.
  - decreases people's motivation to take bitter medications.
  - leads to avoidance of bitter foods that may contain toxic substances.
  - makes children more likely to avoid certain vegetables.
- The diagram on the right shows a PTC molecule. Which of the following diagrams would best represent a receptor protein for a person who is a taster?
 

PTC molecule



Base your answers to questions 5 and 6 on the diagram below that shows structures involved in bitter taste sensation.



5. Damage to the structures labeled X would most likely result in an inability of
  - A. taste messages to be relayed to taste center of the brain.
  - B. taste receptors to attach to food molecules.
  - C. food molecules to enter taste buds.
  - D. taste nerves to carry messages to the nose.
  
6. Structure Z detects stimuli such as the bitter food molecules through the action of
  - A. receptor proteins.
  - B. motor neurons.
  - C. the cerebral cortex.
  - D. the hypothalamus.
  
7. Which group of structures is correctly organized from largest to smallest?

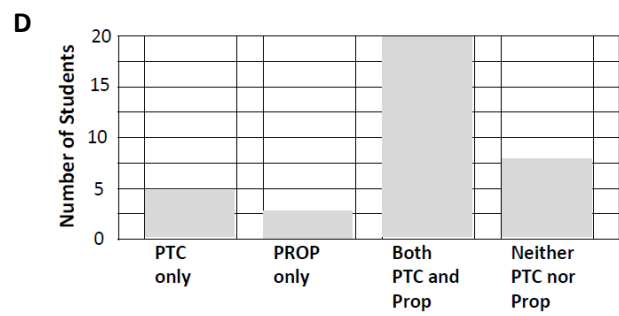
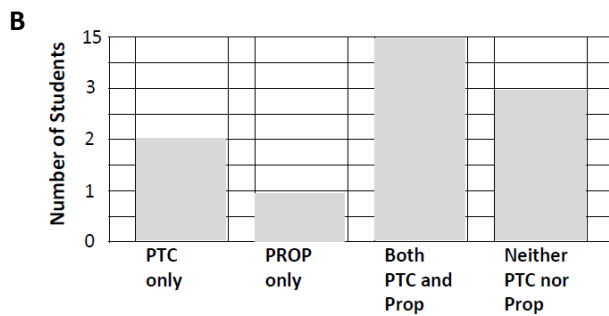
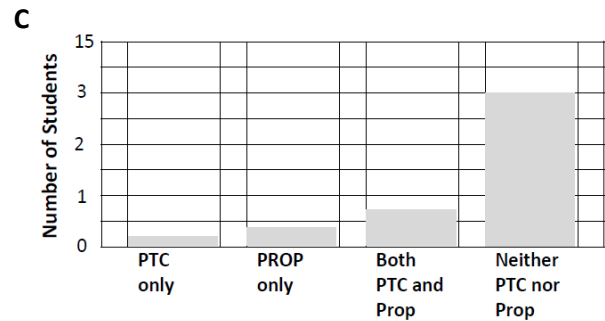
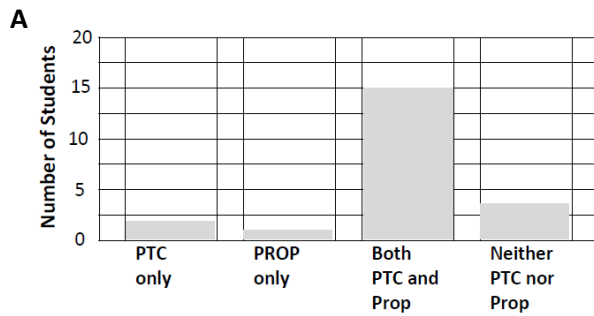
|    |                    |                |                    |                    |
|----|--------------------|----------------|--------------------|--------------------|
| A. | Taste receptor     | Taste cell     | Taste bud          | Brain taste center |
| B. | Brain taste center | Taste bud      | Taste cell         | Taste receptor     |
| C. | Taste bud          | Taste receptor | Taste cell         | Brain taste center |
| D. | Taste cell         | Taste receptor | Brain taste center | Taste bud          |

Base your answers to questions 8 and 9 on the information below.

A biology class conducted an experiment to determine if there is a correlation between the ability to taste two different bitter chemicals—PTC and PROP. The data they collected in their experiment is shown in the table below.

| Students who could taste: | Number of Students |
|---------------------------|--------------------|
| PTC only                  | 2                  |
| PROP only                 | 1                  |
| Both PTC and PROP         | 15                 |
| Neither PTC nor PROP      | 3                  |

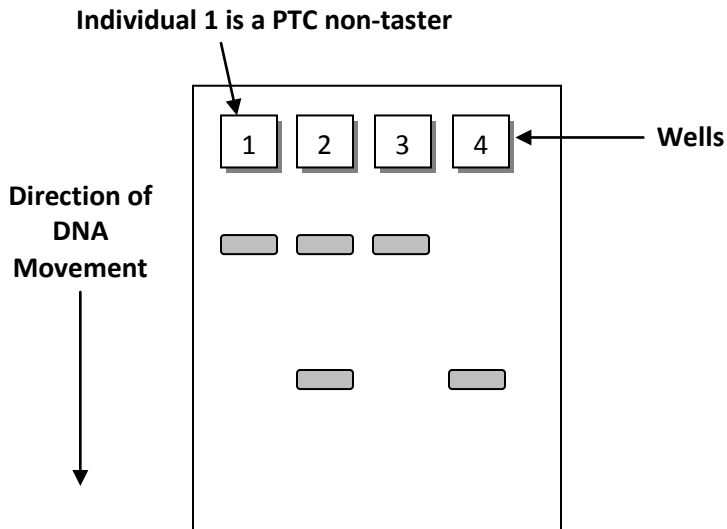
8. Which graph best represents the data in the data table?



9. Based on the information in the data table, one should conclude that

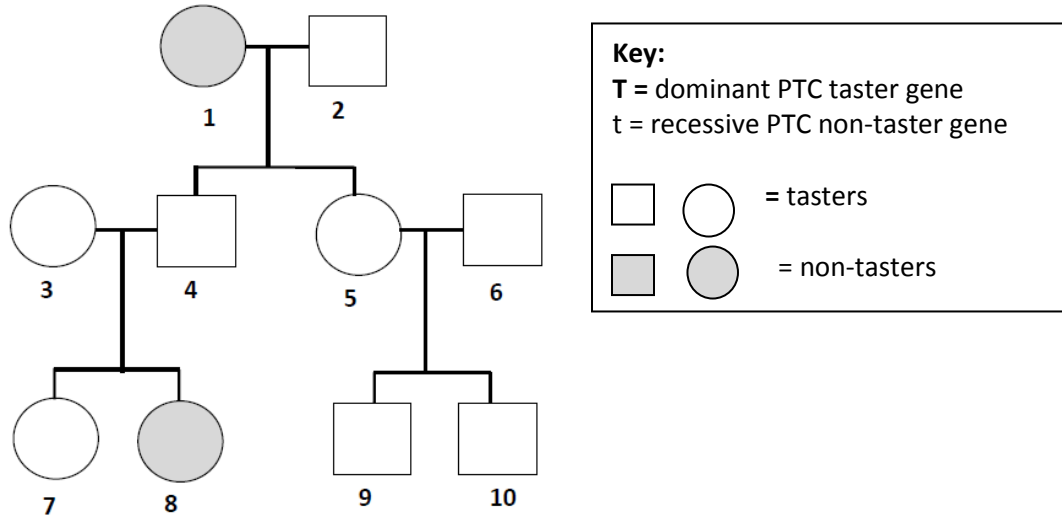
- PROP tasting and PTC tasting are controlled by the same gene.
- the PROP taste receptor and the PTC taste receptor have the same shape.
- people who can taste PROP are more likely to be able to taste PTC.
- there is no relationship between PROP and PTC tasting.

Base your answers to questions 10 through 12 on the electrophoresis gel shown below. The electrophoresis gel was made using copies of the PTC tasting gene from four individuals (1 – 4). The allele for PTC tasting is a dominant allele. The allele for PTC non-taster is a recessive allele.



10. Individuals 1, 3, and 4 would best be described as
- A. Homozygous.
  - B. Heterozygous.
  - C. PTC Tasters.
  - D. PTC Non-tasters.
11. What is the phenotype of individual 2?
- A. Homozygous dominant
  - B. Heterozygous
  - C. PTC Taster
  - D. PTC Non-taster
12. If individual 3 and individual 4 have a child, what is the probability that the child will be a PTC taster?
- A. 0%
  - B. 25%
  - C. 75%
  - D. 100%

Base your answers to questions 13 through 15 on the pedigree and key below.



13. Which individual most likely has the **tt** genotype?

- A. 1
- B. 2
- C. 3
- D. 4

14. Which individual has a **Tt** genotype?

- A. 5
- B. 6
- C. 7
- D. 8

15. Which individuals have the non-taster phenotype?

- A. 1 and 8
- B. 9 and 10
- C. 1 and 2
- D. 3, 4, 5, and 6