Bioinformatics:

The Power of Computers in Biology

Answers

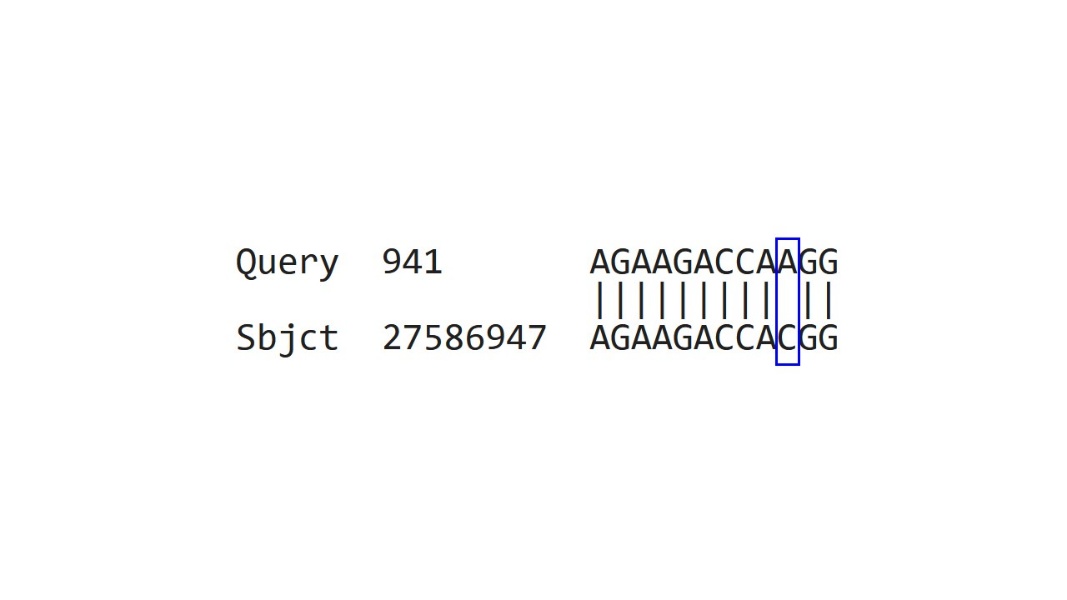
**QUESTION 1.** L-gulonolactone oxidase.

**QUESTION 2**. It is found in the house mouse (*Mus musculus*).

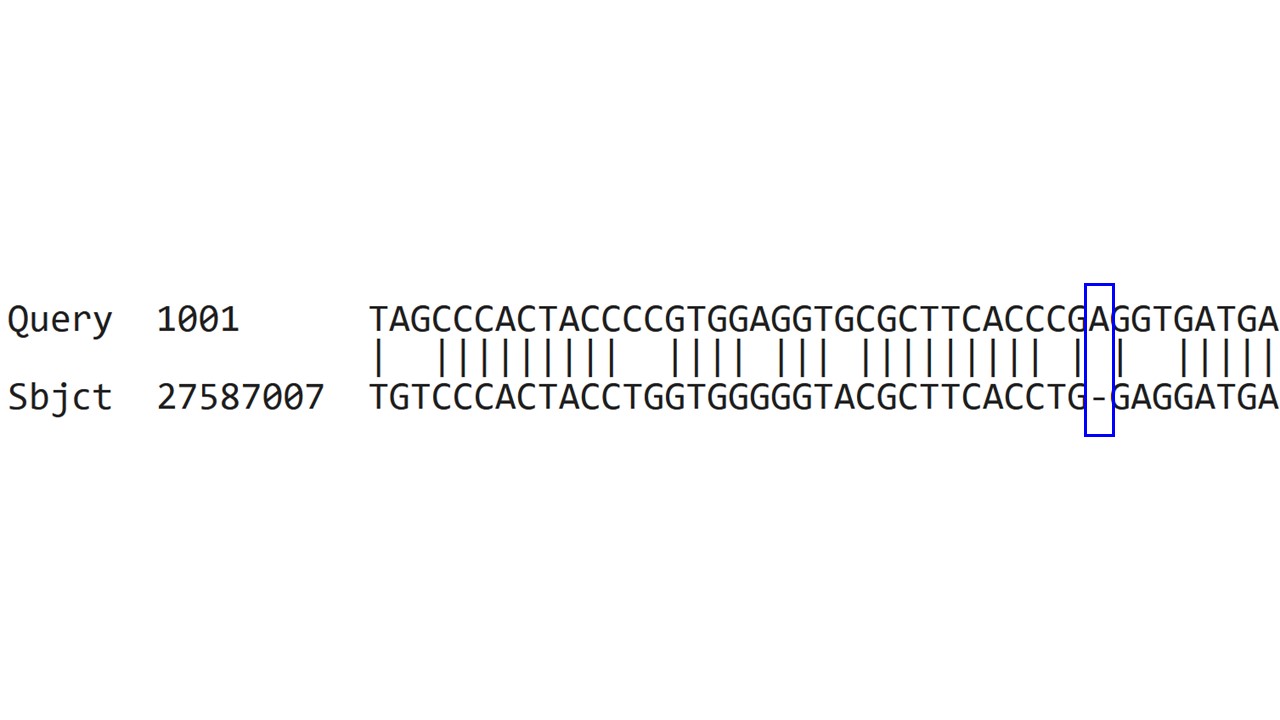
**QUESTION 3**. It is an enzyme responsible for the synthesis of Vitamin C.

**QUESTION 4**. Chromosome 8.

**QUESTION 5**. Yes, there is evidence of substitution mutations, for example this one, highlighted by the blue box:



**QUESTION 6.** Yes, there is evidence of insertion or deletion mutations, for example this one, highlighted by the blue box:



(Your own sketch may be smaller, which is fine.)

**QUESTION 7**. The gene no longer codes for a functional protein, due to the frameshift mutation.

**QUESTION 8.** The mouse does not have to eat fresh fruit and vegetables to stay healthy, because it can synthesize vitamin C using L‑gulonolactone oxidase. Humans do have to eat large amounts of fresh fruit and vegetables, because humans do not have a functional version of the gene that codes for this enzyme.

**QUESTION 9.** The pupil should list the animals they chose, and then whether the animal can produce their own vitamin C. Humans = no, chimp = no, guinea pig = no, dog = yes, cat = yes, cow = yes, rabbit = yes, chicken = yes, sloth = yes, lemur = yes, shark = yes

Note: Cats, dogs and many other carnivores have one functional copy and one non-functional copy

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| For worksheet version 3.0 (extended) |
| 4273pi Bioinformatics Education Project, <https://4273pi.org> |
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