ACT Science

CONFLICTING VIEWPOINTS AND TIPS FOR THE SCIENCE SECTION

What is Conflicting Viewpoints?

- This passage is not like the other science passages on the test. Instead of giving you graphs and tables to analyze, it has you compare different hypotheses to one another
- This passage is easy to spot because it doesn't have as much data as the other passages and is just text. Sometimes, you might get a picture of the experiment the hypotheses are referring to.
- The key to doing these types of passages is to switch gears back to reading. Since most of this passage is reading about an experiment and comparing the hypotheses, you will want to use a similar strategy as the reading passages.
- Be mindful of time! You still want to stay around 5 mins on this passage. At most, spend 6:30min on this passage.

Dissecting Conflicting Viewpoints

Understanding the layout of this passage type can help you approach it in a manner that saves you time and gives you better accuracy. As you learn about the layout think about how you can effectively tackle this passage. We can talk about a strategy on a personal level during independent work.

- Introduction
- Picture (Sometimes)
- Hypothesis/Scientist/ Student 1,2,3 etc
- Always 7 questions

Introduction

Passage I

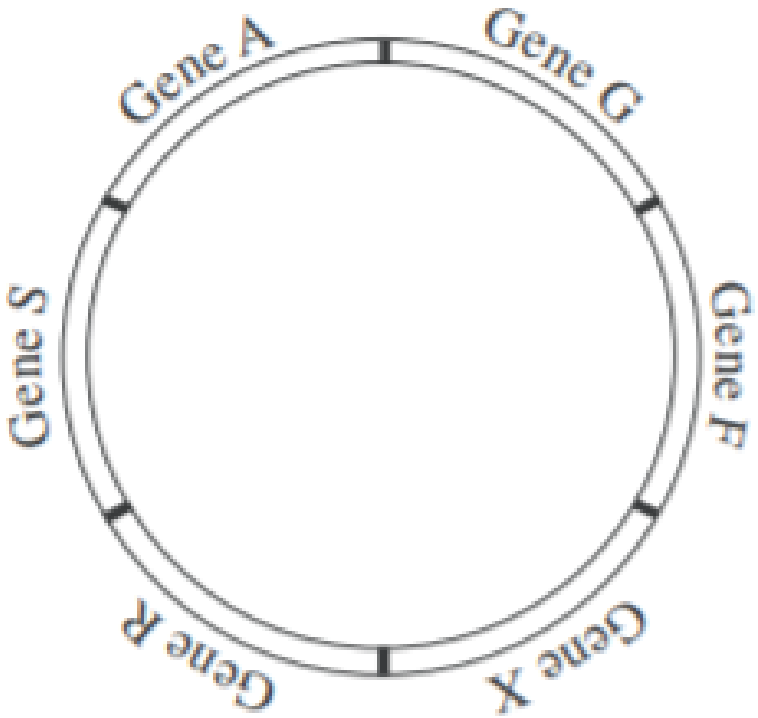
Many bacteria contain *plasmids* (small, circular DNA molecules). Plasmids can be transferred from 1 bacterium to another. For this to occur, the plasmid *replicates* (produces a linear copy of itself). The relative position of the genes is the same on the original plasmid and on the linear copy, except that the 2 ends of the linear copy do not immediately connect.

While replication is occurring, 1 end of the linear copy leaves the donor bacterium and enters the recipient bacterium. Thus, the order in which the genes are replicated is the same as the order in which they are transferred. Unless this process is interrupted, the entire plasmid is transferred, and its 2 ends connect in the recipient bacterium.

Four students studied the way in which 6 genes (F, X, R, S, A, and G) on a specific plasmid were donated by a type of bacterium (see the figure). The students determined that the entire plasmid is transferred in 90 min and that the rate of transfer is constant. They also determined that the genes are evenly spaced around the plasmid, so 1 gene is transferred every 15 min. They disagreed, however, about the order in which the genes are replicated and thus transferred. Four models are presented.

Picture

Sometimes you will get a picture, but most of the time you will not. In this case, they gave us a picture to reference to. Pay attention to how the viewpoints relate back to the picture.



Different Viewpoints

This could be any of the following

- Hypothesis
- Scientists
- Students 1,2,3, etc.

Student 1

Replication always begins between Gene F and Gene X. Gene X is replicated first and Gene F is replicated last.

Student 2

Replication always begins between Gene F and Gene X. However, the direction of replication varies. If Gene F is replicated first, Gene X is replicated last. Conversely, if Gene X is replicated first, Gene F is replicated last.

Student 3

Replication can begin between any 2 genes. Replication then proceeds around the plasmid in a clockwise direction (with respect to the figure). Thus, if Gene S is replicated first, Gene A is replicated second, and Gene R is replicated last.

Student 4

Replication can begin between any 2 genes. Likewise, replication can proceed in either direction. So the order of replication varies.

Question Types

One Viewpoint

- These questions ask about just one of the viewpoints in the passage. It could be information straight from the viewpoint or information straight from the introduction. Go back to whatever viewpoint it is asking about first. If the answer isn't there, read the introduction for more information.

Question from 61C

2. Based on the model presented by Student 3, if all 6 genes are replicated and the first gene replicated is Gene G, the third gene replicated would be:

F. Gene F.
G. Gene A.
H. Gene S.
J. Gene X.

Question Types

Consistency with a Viewpoint

- Think back to our Consistency Question Type. In this case, they ask you if a hypothesis or fact is consistent with a viewpoint. Look over the viewpoint the question is referring to again and see if it is consistent or not.

Question from 64E

34. Which of the following statements is most consistent with the DNA Hypothesis? The amount of DNA will generally increase from cell type to cell type as the number of:

F. amino acids in the nucleus increases from cell type to cell type.
G. amino acids in the cytoplasm increases from cell type to cell type.
H. chromosomes in the nucleus increases from cell type to cell type.
J. chromosomes in the cytoplasm increases from cell type to cell type.

Question Types

Which Viewpoint supports a fact or claim?

- These questions want you to take a piece of information the question is giving you and decide which viewpoint either supports it or does NOT support it. Go through the viewpoints and decide if the viewpoint agrees or disagrees with the statement. Check them off as you go to help you keep track of them.

Question from 61C

6. Suppose that all 6 genes are transferred from a donor bacterium to a recipient bacterium. Under this condition, which student(s) would argue that Gene A could be the last gene transferred?

F. Student 2 only
G. Student 4 only
H. Students 2 and 4 only
J. Students 3 and 4 only

Question Types

Comparing Viewpoints

- These questions ask about the difference between certain viewpoints
- A tip for these questions is to look at the answer choices and let them guide you to the right answer. There are usually true and false statements in them.
- Be careful not to mix up the viewpoints!

Question from 59F

6. Which of the following phrases best describes the major point of difference between the 2 scientists' hypotheses?

F. The location of the event
G. The speed the object was traveling
H. The density of Earth's atmosphere
J. The type of object that entered Earth's atmosphere

Practice Time!

Gene A
Gene G
Gene F
Gene X
Gene R
Gene S

Tips and Tricks

- If you struggle with timing, try to go to the questions first
- Process of elimination is your friend
- It is an open book test!
- Write information off to the side
- Give yourself a chance to understand the graph/table
- If CVP takes a long time, do it last
- Use Keywords when you don't know what to look at
- Don't bet caught up in the subject matter
- Practice, Practice, Practice!!!