

Can DNA Sequences Protect Public Health?

Your team of experts will gather in-depth information on new technology using DNA sequences to quickly identify unknown disease causing agents. The information you gather on this topic will be vital for the group discussion that will take place toward the end of your visit to the Museum, which will focus on:

"How can the knowledge of DNA sequencing be applied in the future?"

Answers to this worksheet can be found in the *How Can DNA Sequences Protect Public Health?* station.

1. What does SARS stand for?

2. Using the left-hand screen titled "Every Virus Has Its Own DNA Sequences" try to quickly identify what virus the red sequence belongs to by using the interactive display. What is the name of the virus that matches the unknown DNA sequence?

Human _____ virus 3

3. What new DNA technology was used as an identification tool to find the cause of SARS?

4. Answer the following questions about creating a virus chip:
 - a. When creating a virus chip, how many viral DNA sequences (or dots) are contained on the grid?

 - b. How many base pairs, or letters, are contained in each DNA sequence?

 - c. How many different virus strains are represented on the chip?

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5. Look at the middle panel that describes how a virus chip is used to create unique barcodes for each virus.
 - a. The virus chip produces different colored dots. What color dots indicate sequences that match the unknown virus?
 - b. What determines the brightness of each bar on the bar code?

6. Answer the following questions using the right-hand interactive titled "Now, Every Virus Has a Bar Code".
 - a. How can viruses be grouped when using bar codes?
 - b. Use the interactive to identify Known Virus #1.
 - c. Which was faster and easier to use in finding a match for the human parainfluenza virus 3, the method using DNA letter sequences (on the left) or the method using bar codes (on the right)?
 - d. What virus family is the SARS virus most closely related to?

7. What animals do scientists think are the most likely sources of SARS?

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