

Overview - Introduction to DNA Sequences

The National Academies make recommendations to decision makers using available scientific evidence. Today you and your team members will formulate your own recommendations. You will find a great deal of scientific information in this exhibition to help you.

Each team of students will gather detailed information from designated stations in the *Putting DNA to Work* exhibition. Later you will share the information with your colleagues from the other teams. Your visit will conclude with a discussion of the bigger question:

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

Everyone in the class will work through the stations on *Tracing Similarities and Differences in Our DNA*, *Where are Genes Found?*, *Unzipping DNA*, and *Probe the Sequence*. Gather specific information on each of these for our group discussion.

Tracing Similarities & Differences in Our DNA

1. Using the interactive stations, find the percentage of genes that each of the 5 organisms shares with you.

Mouse: _____ Fruit fly: _____ Chimpanzee: _____ Yeast: _____ Plant: _____

2. If people share 100% of the same genes, why are we all not identical to each other?

Where Are Genes Found? (Glass wall)

3. Circle the larger item in each pair: Cells -or- Tissues Genes -or- Chromosomes

4. What is meant by the term "genome"?

5. About how many genes are found in the human genome?

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Unzipping DNA

6. Watch the video and briefly describe the shape of a DNA molecule: _____
7. What are the building blocks of DNA called? _____
8. How many kinds of building blocks are there? _____
9. How can one of the strands of a DNA molecule be used like a photographic negative?
10. When the building blocks pair up, which ones pair together?
_____ & _____ & _____

Probe the Sequence

11. Probe the DNA sequence using 3 and 6 letter probes. Find one probe that has at least 30 matches on the screen. Is the probe a 3 or 6 letter probe?
Probe sequence: _____ # of Matches: _____ CIRCLE ONE
3 letters -or- 6 letters
12. How does the length of the DNA probe affect the number of matches the probe will find in the human genome?
13. If every cell in the body contains all of the same DNA sequence, then why are some cells so different from others?

Two Copies of the Genome

14. You inherit one copy of your genome from each parent, so...
 - a. How many copies of every gene sequence do you inherit from your parents? _____
 - b. How many chromosomes do you inherit from each parent? _____

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