

Name

Date

Period

BioTechnology: Web Quest

Part 1 - Manipulating Genes

Go to <http://www.dnai.org/b/index.html>

Read the introduction. What were some questions scientists asked in the 1970's regarding the genes in DNA?

1. Questions

Click on *Revolution*

Summarize the problem

2. Summary of problem

Click on *Pieces of the Puzzle* (top menu bar)

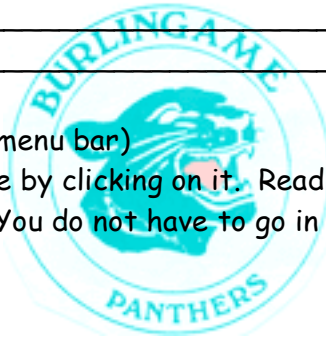
Learn about each piece of the puzzle by clicking on it. Read the text and view the animations. Summarize what you have learned. You do not have to go in the order listed below.

2. Restriction Enzymes -

3. DNA ligation -

4. The First Recombinant DNA -

5. DNA Transformation -



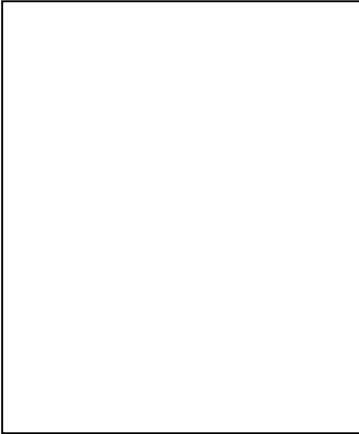
Click on *Techniques* (bottom of page)

Click on *Cutting & Pasting* (top of page)

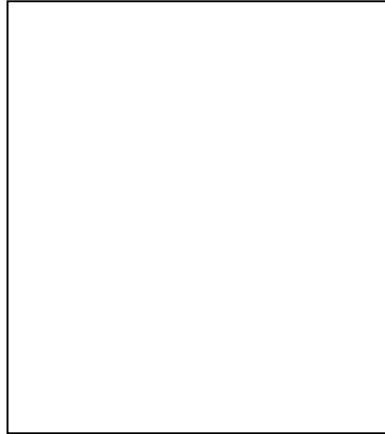
Click on the *Cutting & Pasting DNA* button. Read the text and view the video.

6. Make 3 sketches; a) Before DNA is cut b) After it is cut, and c) after it is pasted together. (Include nitrogen bases and which type of enzyme is used at each stage.)

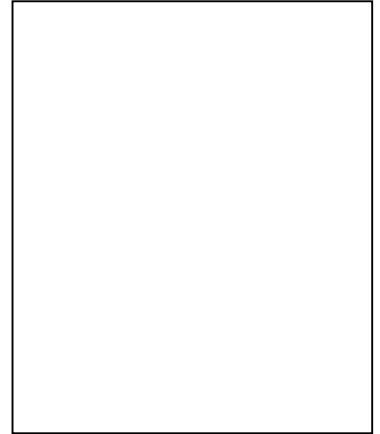
a)



b)



c)



Click on *Recombining DNA*. Read the text and view the video

7. What is a plasmid? _____ What organisms have plasmids?

8. Summarize the technique developed in the 1970's in which a DNA fragment is added to a plasmid.

9. Check out the interviews with the scientists that made these discoveries.

10. If you are interested continue with the other techniques involved in manipulating DNA.

Part 2 - Gel Electrophoresis

Go to <http://www.tvdsb.on.ca/westmin/science/sbioac/genetics/Electro.htm>

Read the introduction and the 3 main points of gel electrophoresis. Run the animations.

1. The DNA is being cut into fragments by _____
2. Where are the fragments transferred? _____
3. What goes through the gel that creates a negative charge on one end (cathode) of the gel box and a positive charge (anode) on the other end of the gel box?

4. What charge does the DNA fragments have? _____.
5. If you place the DNA on the negative side of the gel box it will be attracted to the?

6. What do you think happens if the DNA fragments are all different sizes (with different weights) as they move through the gel?

Review both animations & the above questions. You need to have a good understanding of this process for the labs in this unit!

Part 3 - DNA Fingerprinting (an application of biotechnology)

Go to <http://www.pbs.org/wgbh/nova/sheppard/analyze.html>

In this section you will solve a "crime" by doing a "DNA fingerprint" found at the crime scene and comparing it to the "DNA fingerprints" of several suspects. By comparing the DNA from the crime scene with the suspects' DNA you will find the "criminal".

Read the introduction then proceed through parts 1, 2, & 3. Do the simulated procedure.

Which sister committed the crime? _____.

Part 4 Applications

Go to <http://www.dnai.org/d/index.html>

You have already investigated one application of biotechnology in the above "fingerprinting" activity. In this section other applications of the technology are explained. Choose between the *Genes & Medicine* or the *Human Origins* modules and explore it. Pick an area of interest for you in either module and write a short paragraph about it. What did you learn?

Part 5 - Ethics

Go to <http://www.thetech.org/exhibits/online/genome/thread3.html>

In this section you will explore some ethical issues associated with biotechnology.

Click on each dilemma. Read the dilemma and decide what you would do. Put your answer on the appropriate line.

1. Be a parent _____.

2. Be a judge

_____.

3. Be a doctor

_____.

4. Be a voter

_____.

5. Be a patient

_____.

