Gene Technology Stations

Name

Mutations

Time to apply what you learned about protein synthesis! At this station you will be looking at how a mutation affects the final outcome of protein synthesis, the protein that is made. You will need to use your awesome mRNA decoder skills from the last unit to figure out how the amino acids (building blocks of the protein) would change.

1. What is a mutation?

2. What are the 3 possibilities of how DNA could be changed?

	Substitution #1				Substitution #2			
mRNA								
Amino Acids								
Are these mutations helpful, harmful or neutral? Explain.								

	Deletion #1				Deletution #2			
mRNA								
Amino Acids								
Are these mutations helpful, harmful or neutral? Explain.								

	Insertion #1				Insertion #2			
mRNA								
Amino Acids								
Are these mutations helpful, harmful or neutral? Explain.								

DNA Fingerprinting

1. What are the two main uses of DNA fingerprinting?

2. How do scientists cut the DNA?

Who's the Daddy?

3. Which child is mom's child from a previous marriage?		4. Which child is adopted?
Child		
How do you know?		

Which suspect is guilty? A DNA fingerprint is similar to a real fingerprint in both you are trying to find matching patterns. The lab has just a few gel bands. DNA fingerprints might have over 100 bands to match up.

5. Which suspect from the lab sheet has DNA that matches that found at the crime scene?

6. How many bands matched? How many bands is a real DNA fingerprint more likely to have?

Ethics Questions

Pick 3 questions from the pile of Ethics Questions. Answer the questions and write the number of the question on one of pieces of paper provided. Explain your answer! Staple answers to this sheet.

Articles

Miracle Grow (EarAche p. 10-11)
List 3 different methods for "growing" new organs

Little People Avoid Cancer, Diabetes (Mighty Bites p.13)
Explain how this genetic mutation is helpful.

Code of Misconduct (Lake of Fire p.8-9)
Why is it called DNA "fingerprint"?

How were the criminals in Tommy Two Times case caught?

Cloning

Is cloning real? Can we make a clone of an organism? The answer is YES! Cloning is real. The first mammal to be cloned was a sheep named "Dolly." Dolly the clone was born in 1996 and lived until 2003.

Below list the 6 basic steps to cloning an organism:

1.	2.
3.	4.
5.	6.

1. Though there were 3 different adult cows involved in the creation of the cloned calf. The DNA of the cloned calf comes completely (100%) from which sheep in our example?

Now you try it! Use the SmartBoard to see if you can clone a mouse!
Before you begin make some predictions below about what you will see.

2. Which mouse is like Cow A?

3. If Mimi is brown, the egg donor is Black, and the Surrogate mom is white, predict what color our mimi clone will be:

4. Why do you think so? Where does 100% of the clone's DNA come from?

5. Were you correct? Why or why not?

Genetically Modified Organisms (GMOs)

So we can clone an organism, can we change its DNA? Yes we can! Not only can we change the DNA of an organism, we can combine the DNA of two organisms!

1. What is a GMO?

4. Since the genetically modified zebra fish contains genes (recipes) from jellyfish that means that the zebra fish can now make what from jellyfish? **(Hint: Think of the function of DNA)**

5. What is recombinant DNA?

6. Why would we want to genetically modify plants? (Give at least 3 reasons)

7. How do GMO pigs and cows help people?

8. What are the risks with GMOs?

2. Draw & Color a natural Zebra fish
3. Draw & Color a GMO Zebrafish

Why was the grapple created?	Why would a diabetic benefit from eating this lettuce?
How do these plants save lives?	What are pluots and why are they nutritious?
What are the benefits of a see-through frog?	What makes the Enviropig more earth friendly?