Pathogen Tracker Game

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Stage One: Declare an Outbreak

Level II Student Worksheet

Vocabulary: biodiversity, colony, contaminate, database, DNA, *Escherichia coli O157:H7,* foodborne illness, genetic fingerprint, isolate, *Listeria monocytogenes,* obtundation*,* outbreak, pathogen, Pathogen Tracker, PCR, phenotype, restriction enzyme, riboprint, ribosome, RNA, *Salmonella,* Southern blotting, species, strain, subspecies, zoonotic

BEFORE YOU BEGIN PLAYING THE GAME, please answer the following questions:

1.   What is a foodborne illness and why is it such a serious issue?

2.   What is a foodborne illness outbreak?

In the table below, in the column labeled "Predicted Steps" list the steps you think scientists will follow to find the cause of a foodborne illness outbreak. As you play each Stage of the game, record the actual steps the scientists used in the column "Actual Steps." In the "Stage" column, record the stage for the actual step. **Remember,** you will not complete all of the "Actual Steps" until the end of Stage Three of the game.

Predicted Steps	Actual Steps	Stage

3.   Once a cause for a foodborne illness outbreak has been declared, what do you think officials can do to protect the public's health?

YOU ARE NOW READY TO PLAY THE GAME. As you play the game, answer the questions when you come to the appropriate page.

What are foodborne pathogens?

What symptoms were the patients with the suspected foodborne illness experiencing?

In the table below, record the symptoms of the following foodborne pathogens*: Escherichia coli* (E. coli) O157:H7, *Listeria monocytogenes (L. monocytogenes), and* Salmonella.

Pathogen	Symptoms
Escherichia coli **O157:H7**	
Listeria monocytogenes	
Salmonella	

Now compare the symptoms experienced by the patients with the symptoms for each of the pathogens. Which foodborne pathogen is responsible for the suspected foodborne illness outbreak.

Using the information in the Encyclopedia, in your own words, explain what a riboprint is. Make a drawing of a riboprint.

In the table below, record the names of the patients who had the same riboprints, the date on which their symptoms first appeared, and the state in which they live.

Patient Name	Date	State

Using the information in the Encyclopedia, describe how Pathogen Tracker is used to track a foodborne illness outbreak.

When the screen shown on the right is reached, you should read the **INSTRUCTIONS** and then use the back button to return to the **PT DATABASE**.
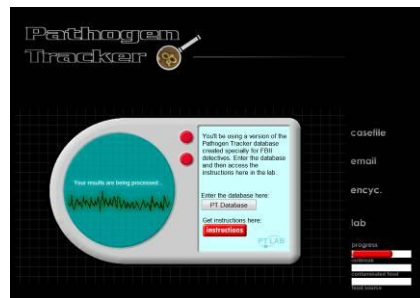

In your own words, explain in detail how the Pathogen Tracker database can be used to identify the strain of *L. monocytogenes* responsible for the foodborne illness outbreak.

Which strain of *L. monocytogenes* was identified as being present in the patients?

What parameters are necessary in order for a foodborne illness outbreak to be declared?

Below are two graphs from the game entitled "Foodborne Illness Incidences Over the Last Five Months". Using the pages from the game, explain the differences between the two graphs and tell why Graph 2 is more appropriate to use in declaring an outbreak.
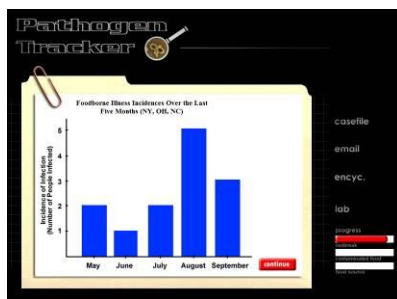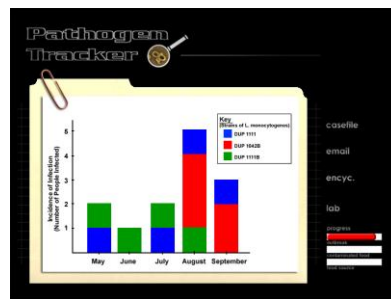
Graph 1   Graph 2

Return to your Table on page 2. Review the steps you predicted and describe how well you did in predicting what steps the scientists would follow in finding the cause of the foodborne illness outbreak.

Password to go to Stage Two: Find the Contaminated Food: _____